

January 2018

Issue 20

THE SPECTRUM SHOW

Magazine

INFOCOM™

GAMES ON YOUR SPECCY

MIND YOUR LANGUAGE

Programming languages continued...

FLASHBACK 87

GAME REVIEWS

HARDWARE

SPECIAL FEATURES



Includes material
not in the video
show!

LOCK & LOAD

Loaders and protection
systems.



CONTENTS



12. INFOCOM GAMES
On your Spectrum.



16. OCP ART STUDIO

Professional art package.



22. MIND YOUR LANGUAGE

Spectrum languages.

FEATURES

4 News from 1987

Find out what was happening back in 1987.

12 The White House

Infocom games on your Spectrum.

16 OCP Art Studio

Graphics package with mouse control.

22 Mind Your Language

George gets to machine code.

32 Lock and Load

Loaders and protection schemes.

36 Vega Games

Games without instructions on the Vega.

38 Grumpy Ogre

Retro adventuring and championship moaning.

42 Spectrum Means Colour

The final part of a feature looking at colour games.

And more....

GAME REVIEWS

3D Tanx 6

Decor Wreckers 7

Trantor the Last Stormtrooper 8

Kosmic Pirate 10

Blackstar 11

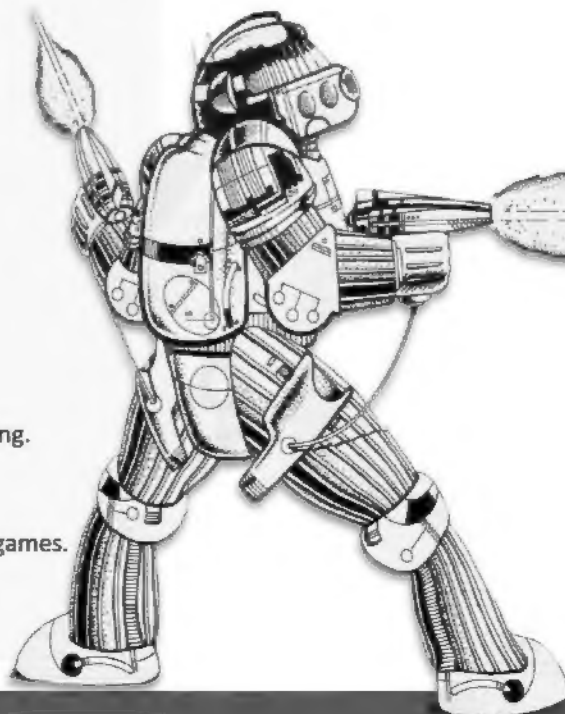
G-Man 20

Bristles 21

The Dark 28

Cookie 30

Starclash 31





Welcome to issue 20 and thank you for taking the time to download and read it.

A new year begins and there is a lot happening in TSS towers at the moment. I have a new game out and two of my other games are now available to buy on real media. Yes, you can now buy four of my games on cassette just like in the old days.

Thank You To...

The great cover art for the games was produced by Kevin McGrorty, and my thanks go to him for doing such a fantastic job. Thanks also must go to Cronosoft for continuing to release games for many 8 bit machines in the original format.

This issue sees the end of a long running feature, Spectrum Means Colour, and I really appreciate the work Poitre has put into writing it.

That of course means there is a large hole to fill, so anyone who fancies writing something, please get in touch. You can write a one-off review, or a series of features on a specific topic. Just remember, your work will be archived on the internet and be available to read for years to come. Make your mark now, go on, give it go.

I am also beginning to plan the next series of the show, working out what hardware to review, what games to play and what to chat about with Geoff. I have enough hardware for the next series, but may run short later on. I continue to check online sites, but with ever-increasing prices, the cost becomes too much. This is one reason you can now support me via Patreon. (www.patreon.com/thespectrumshow).

LOAD Film 2

The second of Andy Remic's films was funded on Kickstarter, and now the hard work begins to get this film made. Chris Wilkins from Fusion Retro Books is also involved and together they have promised great things.

They will expand greatly on the first film, incorporating

hardware, companies, magazines and even the modern games creation scene. That all sounds fantastic.

I have been asked to participate in the film, but as yet I am not sure which elements they want me to be involved in. I have tons of hardware, a long history of the Spectrum and of course my games. So those who backed the film will get to see me on the other side of the camera for once.

From one success to another...

Crash!

Those of you who backed the Kickstarter campaign for the new Crash magazine will have already received your edition, and a fine thing it is too. Chris has done a great job in preserving the look and feel of the original, and it was such a good read.

I hoped you liked my "Making Of..." piece. I had to cut it down a bit to fit the requirements of the mag!

The New Year

What have we to look forward to this year?

There is the Retro Revival show in Birmingham on May 19/20th and Play Blackpool on February 10/11th. Both events I hope to attend, and get my hands on those arcade games as well as getting to some of the great talks that are planned.

The three main UK shows are a credit to those that organise them and to those that attend. Together we are keeping the retro home computer scene interesting and exciting.

If you see a bald old man walking about with a camcorder, it will probably be me.

Fancy writing a game review or special feature?

I am always looking for new content and all contributions are welcome.

CLIVE RETURNS

Clive Sinclair returns to the computer market with his much anticipated portable machine, the Z88.

It is not what users were hoping for because it is not Spectrum compatible. This is due to the Amstrad buy out which means that Spectrum technology cannot be used. It also does not include, as many hoped, Clive's small screen technology used in the Pocket TV.

It does have an LCD screen supporting 80 columns with just eight lines, and from initial views it looks like a business machine, or as Clive labels it, a portable personal computer.

Gamers though will not be looking at this as an upgrade from the Spectrum.



SPECTRUM DISC

Amstrad have announced that a disc version of the Spectrum +2 machine will be released in the summer. Named the Spectrum Plus 3, the machine will retain the 128k of RAM and the keyboard of the +2, but will replace the tape deck with a 3inch disc drive similar to the one used in the Amstrad CPC range.

Up until now, there has been no standard disc drive for the Spectrum, with many third party suppliers releasing their own systems. This held back game companies, but with this move, Amstrad hope to see more disc based games by setting the standard.

ROTRONICS GONE

Rotronics, the company who produced the Wafa drive, has gone into liquidation. Despite efforts to sell the company as a going concern, no deal has been made. Rotronics say they will fulfil any orders and they still hope someone will take on their products.



MELBOURNE HOUSE SOLD

Melbourne House, the company that gave us Penetrator, The Hobbit and Mugsy have been bought by Mastertronic. The



budget label has been looking to buy a full price company for a while now and it seems the time, and money were right for Melbourne House. The cost has been rumoured to be a 7 figure number.

Games will continue to be produced for each respective label.

ELITE DROPS LABEL

2.99, The budget label set up by Elite Systems has been put on hold due to the continual legal action by other companies who provided the software.

Steve Wilcox, it seems, has not paid royalties to many of the third party labels such as Vortex, causing a flurry of legal challenges. With no resolution in sight, it looks like 2.99 will fade away.



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...programmers, watch out

3D TANK

DK'Tronics 1983

For me, this is one of the better 16K games and, to be honest, I thought it was a 48k classic. This game will probably be known to many Spectrum gamers, especially those who got their machine early on: it was one of the 'must have' titles that really shined in an otherwise infant market.

The idea is simple, stop the tanks from getting across the bridge. Sounds easy, but it isn't. To do this you have your own tank and you control the gun turret. You can move left and right, and raise or lower the gun. This dictates how far your shell will go when you fire.

The enemy tanks appear on the bridge in the distance, in one of four lanes. To hit them not only do you have to judge their movement and how long your shell will take to get there, but also how far your shell will travel based on the angle of your gun.

Hitting a tank first time will disable it, leaving on the bridge unable to move or fire back. Yes, the tanks do fire back, and this means you have to make sure their shells do not hit you.

You will soon learn that certain elevations will hit one of the four rows on the bridge and then it becomes easier to target though the game remains a challenge.

Disabling a tank means it stops other tanks from crossing the bridge, however, they can, and do shoot disabled tanks to move them out of the way.

You also have limited ammo, with replenishments arriving at intervals.

Sound is excellent, with some great firing and explosion sounds, although I was never a fan of the early Don Priestley



game menus with the constant beep while you change the settings.

The graphics are well drawn, detailed and move smoothly and this is a great little pick and play game that will be a favourite of many players.

Certainly worth a blast.

DECOR WRECKERS

Scorpion Software 1984



This simple little game is typical of the releases in the early years, between 1982 and 1983, and proves to be very addictive.

The idea is to paint all of the screen using a limited amount of paint by guiding your ever-moving roller. This in itself can be tricky as the roller does not stop and even when you paint over an existing area, it still uses paint.

Once all the screen is covered you guide the roller to the bottom left block to complete the level.

There are other things out to cause trouble though. The first level has what look like mice, randomly appearing on the screen. These have to be painted over to allow you to

complete the level. The next level has a spider that moves downward, removing the paint as it goes. This means you then have to repaint it. Luckily, colliding with it does not kill you.

The graphics are simple but effective and move smoothly, and the sound consists of just clicks and beeps.

I like this simple game, it reminds me of A&F's painter, although unlike that game painting a square does automatically fill it in.

I managed to get to level 6 and discovered other obstacles including snails, that cleared the paint horizontally - a real pain!

Control is good and overall this is a nice little pick-up-and-play game that's worth a quick play.



TRANTOR

THE
LAST
STORM
TROOPER

Go! 1987

Trantor has been betrayed and left alone on an alien planet. There is no further details about this act, but the intro animation gives you some clue.

Left alone, it's now a race against time to activate the transporter so he can escape and presumably take revenge.

To escape, he has to run around the alien complex trying to locate 8 terminals. Each one holds a letter of the activation code. Of course it is never that easy, and there is a very tight time limit. This can be seen ticking down at the top of the screen but, to be honest, you are too busy trying not to get killed.

As you run around, there are various containers that when examined, will produce health, reset the timer or refill your weapon energy. To examine them, you just crouch down in front of them.

On to the game then and, as you can see, the graphics are very nice. Large, well animated and smooth. Trantor can run, crouch and jump, as well as fire his flamethrower.

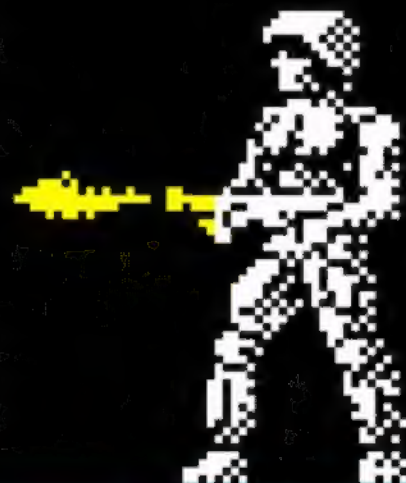
There is always something to shoot but, because of the time limit, it is sometimes best to just run and hope

you can keep finding health pickups.

There are lifts to other levels, where the backgrounds, also very detailed, change giving a variety of different areas.

Sound is used well, with some nice music on the start screen and good effects for various elements of the game.

As a game though, I am not too convinced. That time limit is a real killer meaning you have to learn the game map to survive, and even



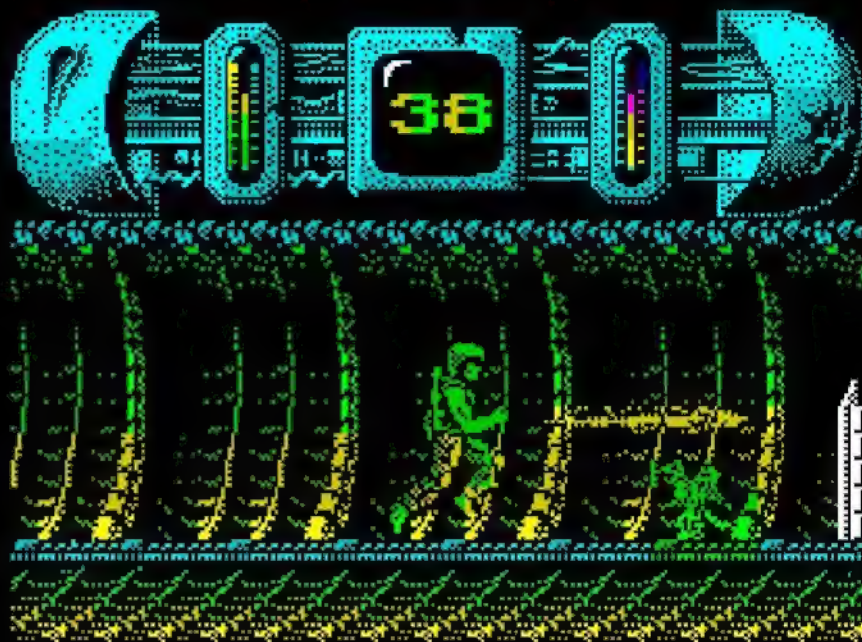
then it can be tricky. There is no time to stop and fire, you just have to find the next health pickup or terminal.

Once you have all eight letters, you head off in search of the transporter so you can enter the code and escape.

I never got all eight letters, but did have a fair few games that started off with me admiring the graphics only to run out of time. That soon edged towards frustration and the timer kept running out despite me hurtling about like a mad man!

Using a poke to stop the timer improved it slightly, as it then became a survival game, which certainly appealed more to me than rushing about trying to beat a clock.

A decent game then, and one that shows off what the Spectrum can do but just be prepared for a lot of frustration until you learn the game map.



KOSMIC PIRATE

Blaby Computer Games 1983

Many years have past since the Krell race have been ejected from their own planet of Verox. The Krells now roam the galaxy looking for anything they can lay their greedy little hands on. This time it happens to be supplies leaving a factory on the way to the warehouse. You must dive down between the fleet of ships that has been assembled to roam the planets surface and stop any unwelcome intruders.

Here then is a simple arcade game from the early life of the Spectrum, and to be honest, it shows.



At first this game reminds me of Lunar Rescue but the gameplay, although similar, is different enough for it not to be considered a clone. It definitely takes inspiration from the arcade game though.

My first attempts to get anywhere were terrible. The game is controlled by the cursor keys, which were always a bad idea, and this sent my ship to many a fiery death. Back in emulation and at least I could use the joystick option and this meant I could at least get a bit further.

You control a small craft and have to navigate to the bottom of the screen and pick up one of the boxes moving

from left to right. Once collected you then have to carry it back up your ship. However, you have a limited amount of fuel to do this and this really does force you to make errors as you rush to complete the task.

Control is in character jumps, which makes things tricky, especially trying to get through the layers of space ships. If you wander too far off the screen, you explode, which is bit unfair considering the poor response to key presses. and you often find yourself being blown to bits for reaching the top of the screen.

The graphics are simple and lack depth or form and move in 8 pixel jumps, giv-

ing the game a type-in feel.

The sound is average for an early game, and has some nice effects here and there, mainly when you explode.

Gameplay soon gets boring as all too often your fuel runs out, with no means to refuel apart from getting one of the boxes back to your waiting mothership.

A simple game then, for a simple time in gaming. Some early games were ground breaking, others though were dull and repetitive....this one falls into the latter category....

BLACK STAR

Juan J. Martine 2015

The solar system of the Kingdom of Heavens has enjoyed peace for thousands of years until an unknown force appeared in the sky of one of their worlds: a wormhole to a dying system. The last hope of the Kingdom is the battleship class Black Star, which will try to repel the horde at all costs.

This is the story for what is a great new shoot-em-up for the Spectrum. You can't beat a good game of Space Invaders, and Black Star certainly delivers.

Armies of aliens stomp across the screen just waiting to be blasted and, like the arcade game, as each one is shot, the rest get faster.

You have to be accurate to clear them all before they get too close.

The graphics are excellent. A planet takes up the lower left, adding a bit of atmosphere, and the monochrome aliens

SCORE 00350 HIGH 01500 WAVE 02



SCORE 01275 HIGH 01500 WAVE 05



are well drawn and animated and move smoothly. The player ship banks as you move left and right adding a bit of polish.

Sound is used well with a nice tune on the intro screen but in-game there is just the stomp and firing sound.

As each wave is cleared, a new wave appears in a different formation and firing more often. They get faster too, so it soon becomes challenging, but in a good way.

All of this makes for a great game and one to seek out if you are a fan of arcade shooters.

Highly recommended.

INFOCOM[™] ON YOUR SPECTRUM

Infocom produced some of the best text adventures ever to grace computers between 1977 and 1987. Other games were produced outside of these dates, and even after they were bought out by Activision in 1986, but their name is synonymous with quality.

When Activision acquired the company and its games, there was a rumour that they would push out versions for the latest ZX Spectrum: the Plus 3. Infocom games required a lot of storage space that could be accessed fast, and cassettes just could not do the job. The Plus 3 though had a disc drive, and this was ideal. Sadly this never came to fruition, leaving us Spectrum owners with just Level 9 and Magnetic Scrolls for our high-quality adventuring fix.

Infocom games were written by a tool named ZIL – Zork Implementation Language, which produced an output in byte-code. This code could then be used on any machine that had a Z-Machine interpreter. The idea being, the game was written once and to make it work on a particular computer, they just had to write an interpreter for it.

Z-Machine interpreters were available for most of the popular computers, and are still supported. Versions are available for PCs, Apple Mac, Amiga, Atari and even iOS and Android!

Around 2006 a Z-Machine program was written for the Spectrum by John Ellison that supported most of the byte-code versions, and using this players could finally get their hands on some Infocom games.



Zork I, inspired by Colossal Cave, was released in 1980 for the TRS80 computer. It sold over 1 million copies.

I have tried to use this tool many times, each time failing, but having a few days spare, I set about trying to finally get it to work and was successful!

Step 1 = CPCFS

Download and un-zip the contents into a folder on your hard drive. It is important to note that this tool will only run on 32bit operating systems. I had to use a virtual machine to get it working.

Once unzipped, there is nothing else to do at this stage.

Step 2 – The Game File

Once you have located the game of your choice, add it to the CPCFS folder. The game file must be a .z5 format and must be version 3,4,5 or 8 of the Z-Machine byte code. You can find details about versions on the Infocom website (<http://www.infocom-if.org/index2.html>)

Step 3 – Preparing the image

Using the command line, go to the CPCFS folder and enter:

```
NEW [name].dsk
```

For example:

```
NEW planet.dsk
```

This will create an empty disk image, ready formatted and ready to use.

To copy the game file to the image use:

```
PUT planet.z5
```

You now have to close the disk image using:

```
CLOSE
```

What You Need

1. ZXVM the virtual interpreter from John Elliot's page: (<http://www.seasip.info/ZX/index.html>)
2. CPCFS, a CPC file system emulator from anywhere you can find it. Currently WOS is broken and the link does not work.
3. Infocom games files (.z5 format)
4. SAMdisk a tool to write .dsk images to real discs. From Simon Owen's site (<http://simonowen.com/samdisk/>)
5. A PC with an internal 3.5 inch disc drive.
6. Some blank discs.
7. A lot of time!



```

C:\CPC>cpcfs
CPCFS --- CPCEmu File
0.85.3 (Compiled: Jan 11 1998 19:46:21)
Page length set to 25
Type HELP for an overview of CPCFS
[lim#/#]>[m new planet.dsk
formatting (Data Format)
[limplanet.dsk/0]>[m put planet.z5
putting "planet.z5": 107958 Bytes
[limplanet.dsk/0]>[m close
```

FEATURE

Step 4 - The ZX Machine

Take the disk image you have just created and insert it into your Spectrum emulator. Do not try to load or run it! To check everything is ok, you can CAT the disc to see the file.

Add the ZXZVM:TAP to the emulator too, making sure the disc image is still there.

Load the TAP file and you will see the intro screen to ZXZVM:

First enter the drive letter:

A:

You will now be shown files on the disk - in this case just the planetfall file.

Enter the filename and press enter.

You are now asked if you want 32 or 64 characters. Make your choice and the game should load.

In the background, the required files have been copied to the disk.

You can change background and foreground colours by using SHIFT 1 and SHIFT 7. You can also edit the loader that has been created on the disk.

To play the game again, you just have to insert the disk image.

Enter LOAD:ZXZVM:BAS/ and type in the file name.

This of course can be automated if you know a bit about Sinclair BASIC.

Repeating the process, and you can create as many disc images as you like, and play the majority of Infocom games.

ZXZVM for +3 Installer

You can make changes to set your preferred colours, typeset and printer before installing.

To do this, press ENTER and alter lines 10-90 as desired, then continue install by typing RUN 9000.

Colours can also be changed in play, by pressing the up and down arrow keys.

Enter drive for install (eg A:)

[L]

Load Files

07/03/21

PLANETFALL: INTERLOGIC Science Fiction
Copyright (c) 1983 by Infocom, Inc. All rights reserved.
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Release 20 / Serial number 830708

Another routine day of drudgery aboard the Stellar Patrol Ship Einstein. This morning's assignment for a certain lowly Ensign Seventh Class: scrubbing the filthy metal deck at the port end of Level Nine. With your Patrol-issue self-contained multi-purpose all-weather scrub-brush you shine the floor with a diligence born of the knowledge that at any moment dreaded Ensign First Class Blather, the bane of your shipboard existence, could appear.

Deck Nine

This is a featureless corridor similar to every other corridor on the ship. It curves away to starboard, and a gangway leads up. To port is the entrance to one of the ship's primary escape pods. The pod bulkhead is closed.

>

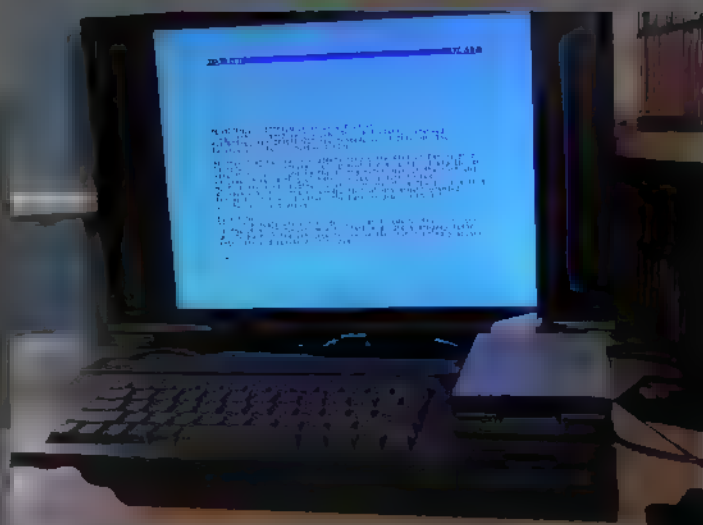
I beg your pardon?

>

Infocom Games: Legality

There are some games that can be downloaded free of charge, with hopefully more on the way. However, for most of them it is illegal.

The best way to get these games is to seek out The Lost Treasures of Infocom compilations on eBay.



Step 5 = Real Discs

I have covered this before in Episode 17, but you need a PC with an internal 3.5inch drive and SAMdisc. The internal driver must be set in the BIOS to 360K 5.25 disc.

Extract the contents of the SAMdisc zip into a folder.

Copy the .DSK file into the same folder.

Using the command line enter:

SAMdisc [image name] ■

For example:

SAMdisc planet.dsk a:

The data will now be written to the disk.

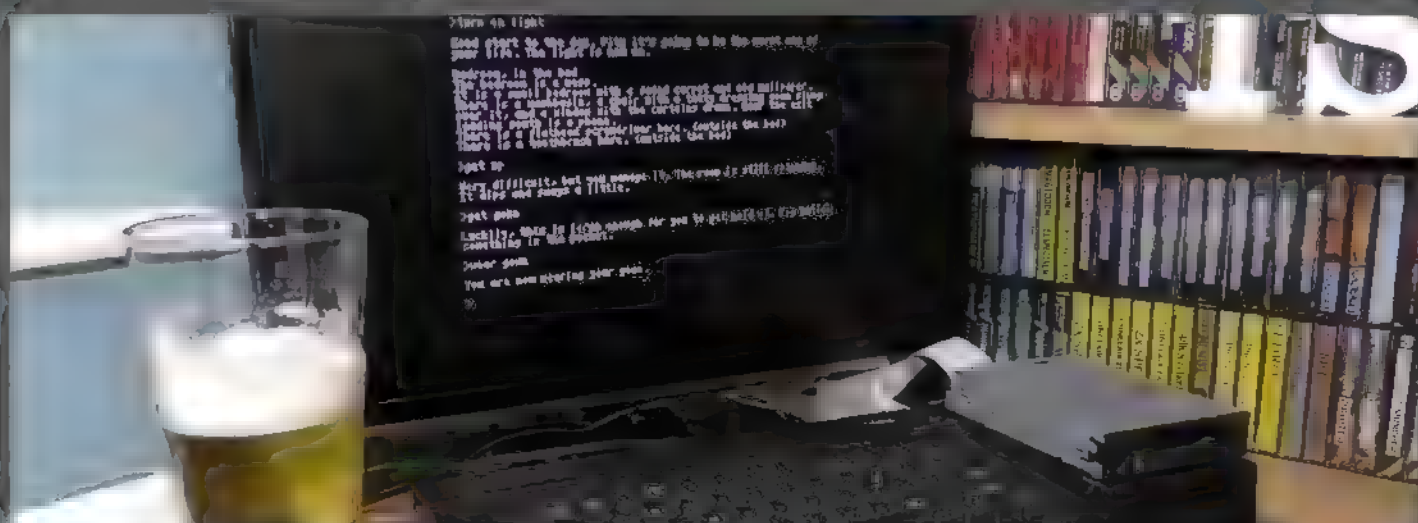
Step 6 = The Real Spectrum

Once complete, remove the disc from the PC and insert it into the real Spectrum.

Using the same commands as before, you can now load the game.

And there it is. A real Infocom game working on a real Spectrum!

I have played Infocom games on many machines, so to get it onto the Spectrum, finally, is great. The 64-character mode takes a bit of reading, but it's a great feeling that the game eventually made it.



SERIOUS SOFTWARE

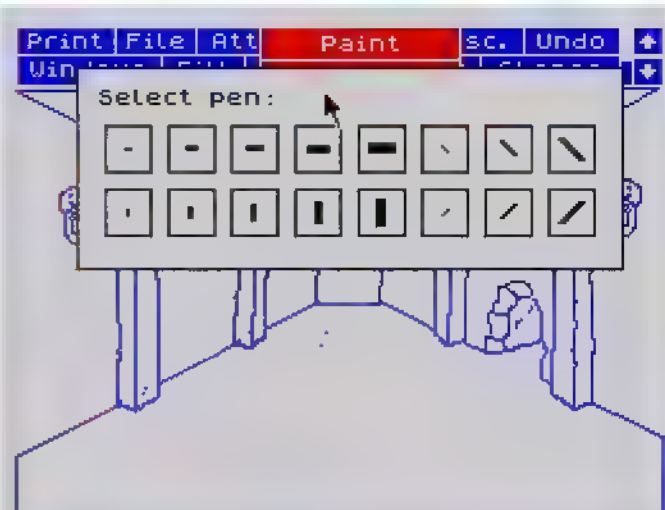


OCP ART STUDIO

The ultimate Spectrum art package?

Mouse controlled art package that borders on professional

OCP ART STUDIO



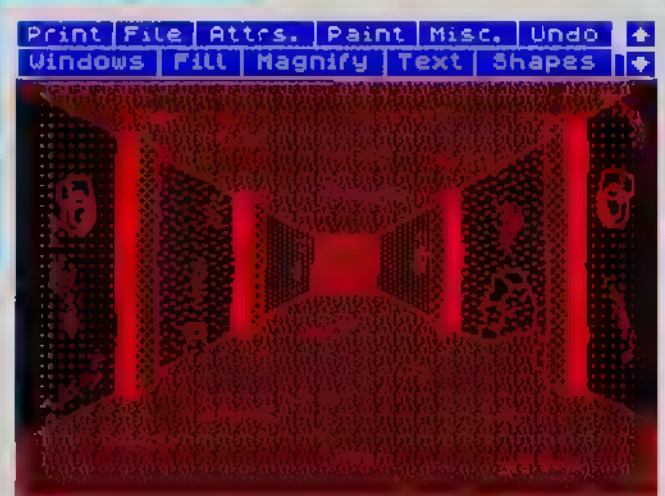
Choose your weapon

Now I know this isn't the best picture and I know there is no colour, but I don't have a lot of time to start worrying about attributes, but the tools are all here should you want to get that deep into it. I could use the grid function to check the attributes before I draw, or even to modify my line work to ensure there is no colour clash.

Now let's have a quick tour of the paint options and there are several pen types to choose from. The Spray can gives different densities to use and considering the resolution of the Spectrum, these work well.

The brushes again have a set of options plus you can also edit or create your own.

I used the Window tool to grab a metal ring I had drawn on the righthand wall, mirror it and paste a copy onto the lefthand wall. This saved so much time having to try to draw another matching ring.



We have seen the fill tool in action, but you can also create your own fill patterns if you want, which is an amazing addition.

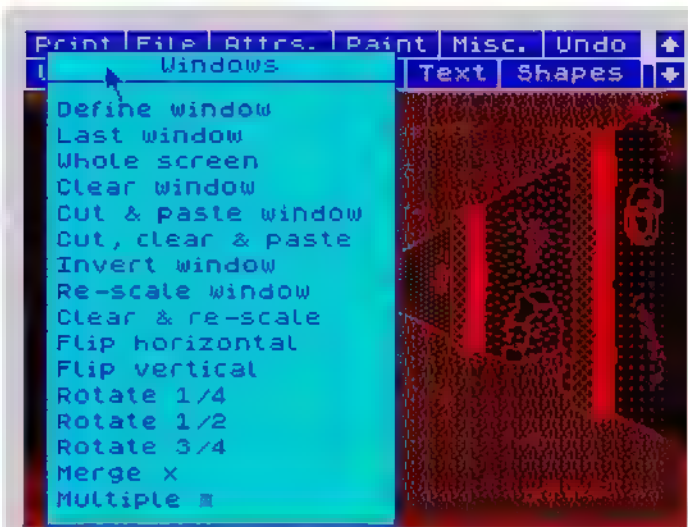
The text options allow normal, double or triple size letters and you can edit your own fonts so plenty of options there. You can even load in other fonts to use.

All in all, this is a very powerful tool, especially when used with a mouse, which is the best option in my opinion. Today's emulators allow you to use your PC mouse as a Kempston or AMX mouse, so you can try this out for yourself.

For any artist, this was a must have for the Spectrum and is highly recommended if you are graphically inclined.

Windows

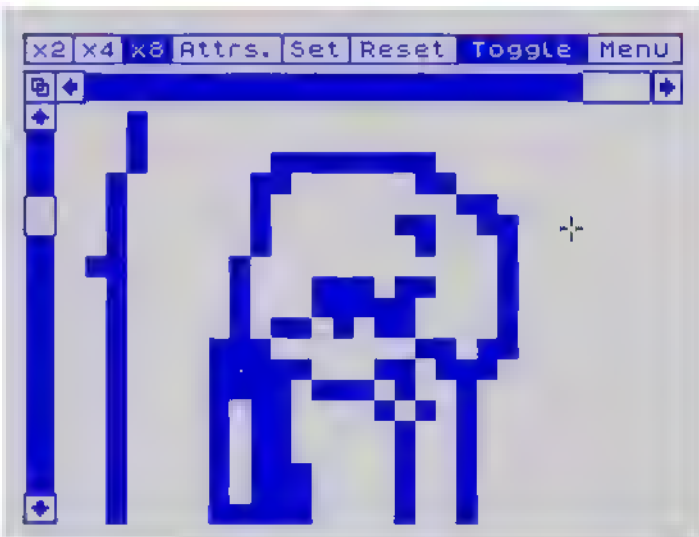
The windows menu lets you cut and paste areas of the screen. This powerful tool is easy to use and helps cut down the time it takes to do simple tasks. Very impressive for a Spectrum.



Magnify

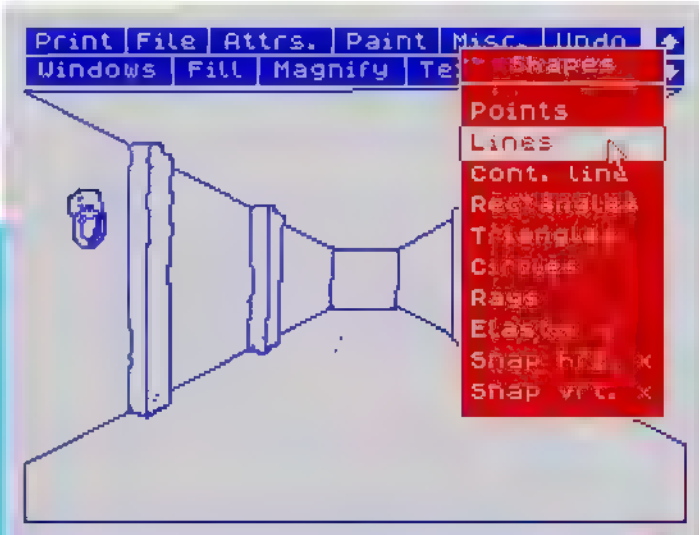
2,4 or 8 times magnification for that detailed work.

Notice the scroll bars on the left and top. These allow you to move around while still in magnify mode.



Shapes

A nice selection of lines, circle and shape options. Easy to use and it allowed me to quickly draw this poor 3D dungeon picture. I added detail to the columns in magnify mode.



GAME REVIEWS



In this release from Codemasters, you play a new recruit of the Space Geology College, and being new you have gone and missed the shuttle back to base. Now you have to get back across the deadly landscape with just a jetpac and laser to help you. Could this be an attempt to 'borrow' the jetpac idea from Ultimate's classic? If it was, then it failed.

The game is a cross between Lunar Jetman and Scramble, and not in a good way. There are so many things just not right here.

You fly or walk across the scrolling landscape, able to speed up or slow down, and of course thrust and fire. Walk into anything other than flat land and you explode for some reason. No stumbling, you just explode!

You have a limited amount of fuel, and so have to keep picking up refills, and the same goes for your ammo too. You can shoot the aliens, but it is far easier to just avoid them if possible.

There are teleports that take you further along the level, and these can be very helpful in getting you to the end

quicker.

The graphics are large and chunky, and borrow a lot from Jetpac, but sadly does not take the control system.

This game has a kind of fake gravity that means you

Codemasters 1987



bounce when you hit the ground and sometimes this sends you into aliens above, very frustrating!

The thrust seems to get more powerful the longer you hold the key, so this again makes control very tricky.

Sound is used well, with a nice tune on the title page and a few spot effects here and there.

As you progress you get caves and missiles that fire upward, similar to Scramble, and manoeuvring becomes ever harder, sometimes to the point that it makes the game unplayable.

For a budget release this isn't bad if you can get to grips with the control system, but I would have been very annoyed had I bought this at full price.



Bristles



At first I thought this game would be a standard Painter or Amidar style game, and it is in a way, but it has some differences. The basic premise is the same in that you have to fill in areas of the screen, but other than that, the game differs.

You control a man who has to paint a house. Each house has a set number of walls to paint in different rooms and on different floors. There are lifts and ladders between floors and you can climb ladders in the normal way. The lifts however work on their own so you have to time your movements to make sure you get in and out at the right moment.

The graphics move well enough and control is crisp, but I wouldn't call them outrageous as the advert suggests. The house is drawn in a way that it's recognisable and the man is a bit on the small

side.

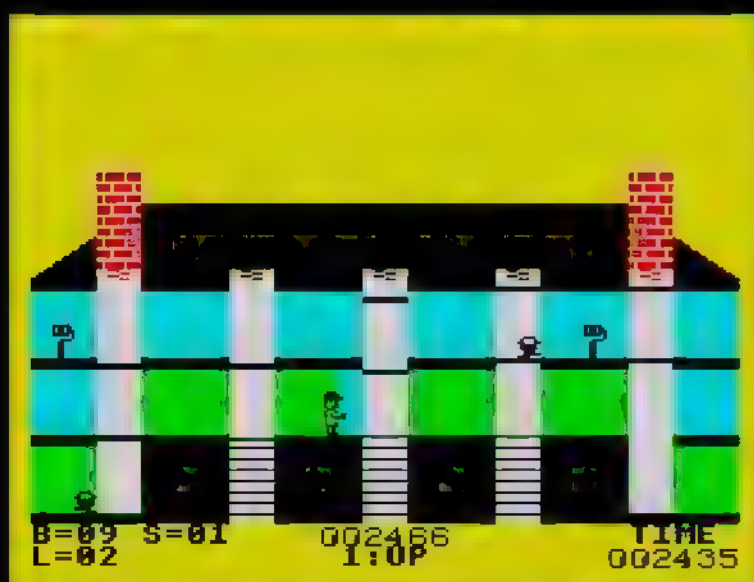
There is a time limit too, so you can't hang around, and this makes the timings even more important to getting a good score.

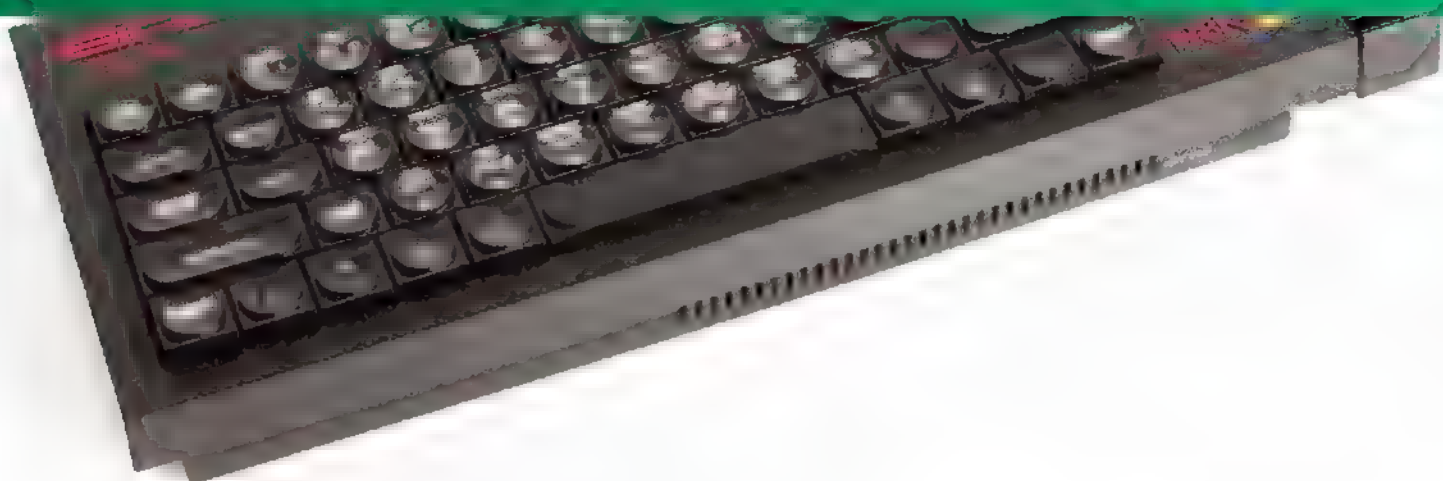
There is a very annoying sound playing throughout the game, a kind of gurgling sound that does not represent anything at all, and this can get tedious.

The game play is not bad actually. The first level is fairly easy but then on the second there are things that can kill you. These knock you back to the start point and you lose a life. Luckily you don't lose any painting you have done.

It's a fun game that will give you a challenge, things move fast though, sometimes too fast, and you can fall down the lift shafts.

Give this one a go.. if you want a nice challenge..





MIND YOUR LANGUAGE

George Beckett continues his voyage through Spectrum programming languages

Optimising the Rabbit Run Game

As we saw in the previous article, a good way to introduce machine code into your programs is to replace BASIC routines that are either not fast enough or that take too much memory. While the program to calculate the day of the week from a date is useful for building up experience, most people who program the Spectrum at some point turn their attention to writing a game. Many Spectrum owners in the 1980's dreamed of writing the next Manic Miner or Horace Goes Skiing and, for this kind of project, some machine code is required.

I was never very good at writing games (and still am not now). However, as for many others, writing Spectrum programs was a bit like building a Lego model. Most of the fun was had during the creation: playing/ using the end-result being less important.

The Rabbit Run program that I introduced earlier in the series is a good example of where machine code can help. The BASIC version of the game runs reasonably smoothly and, with some of the BASIC extensions (like Beta Basic or Laser Basic) we looked at, the performance has been good enough to allow me to include another element in the form of the fox. However, even the fastest implementation—which is probably the compiled, Laser Basic version—suffers from an obvious change of tempo when the fox appears on the screen.

Normally, to look for a bottleneck in a program, you would use a tool called a profiler. However, I am not aware of a profiler for ZX Spectrum BASIC (please let me know if you do), so I typically rely on a mix of intuition, experience and experimentation to identify where a program is running slowly in BASIC. For Rabbit Run, my suspicion is that printing the rabbit (as well as the fox, mole-hills, and food) is the problem. As mentioned in an earlier article, the Spectrum's PRINT command encapsulates a great deal of versatility: it handles printing to both the screen and printer; it can deal with colour/ attribute modifiers; and can expand tokenised BASIC keywords. However, this versatility means the PRINT command is relatively slow, and using a streamlined machine-code print routine for Rabbit Run could lead to a significant speed-up and reduce the tempo change that occurs when the fox appears.

Normally I would suggest not reinventing the wheel at this point and instead looking for a suitable print routine in a book or online. However, there is valuable experience to be gained by writing your own, streamlined print routine in machine code, as to do so you need to understand how the Spectrum display is laid out in memory; understanding that is crucial for many Spectrum development projects.

As I have hinted, the Spectrum screen layout is not what you might imagine: it's actually quite complicated, though for good reason, as we will see. The display is stored at the beginning of RAM – that is, address 0x4000 (or, in decimal, address 16,384) – and occupies 6,912 bytes. This section of memory is read by a very important piece of electronics inside the Spectrum, called the Uncommitted Logic Array (or ULA, for short), which turns the data in memory into a TV signal.

Recall that the display resolution of the Spectrum is fixed to 256 by 196 pixels, which for printing is treated as 24 rows of 32 character cells, with each character having an 8×8 pixel pattern. Ignoring colour, the pixel pattern for a character can be stored in 8 bytes; by treating each bit as a flag for whether a pixel is ink coloured ('1') or paper coloured ('0'). The pixel information and colour information are stored separately: pixel data is stored in the range 16,384–22,527 and attributes are stored in the range 22,528–23,295.

For the pixel information, the screen is divided horizontally into three sections of 8×32 character cells: for character rows 0 to 7, 8 to 15, and 16 to 23. Within each section, the pixel bit pattern for the first row of each character cell is stored first, character row by character row for the eight rows, followed by the second (pixel) row, then the third, and so on.

So, the first byte of the display file contains the pixel pattern of the first row of eight pixels, for the character at the top-left hand corner—that is, at character cell (0, 0). The second byte of the display file contains the pattern for the first row of character cell (0, 1), and so on until the 32nd byte, which stores the value of the first row of the character at (0, 31). So far, this seems reasonable. However, the next byte (that is, the 33rd byte of the display file) contains the pixel pattern for the first row of the first character on the second row—that is, at location (1, 0); whereas you might have expected to find the second row of the character at location (0, 0). This layout continues until the 256th byte, which stores the pixel pattern of the first row of the character at location (7, 31) and which is the bottom, right character cell in the top, one-third of the screen. The next byte (the 257th) contains the pixel data for the second row of the character at location (0,0) and the subsequent entries up to the 512th byte contain the pixel data for the second row of each character location, as was the case for the first row. Then the third row of pixel data for each character is stored, and so until all eight rows of each character in the top third of the display have been accounted for. This takes $8 \times 256 = 2,048$ bytes. Then the arrangement is repeated for the second third of the screen, and finally for the bottom third of the screen.



You can actually see this layout when you use `LOAD "<filename>" SCREEN$` as, for example, at the start of a game. Above you can see the in-progress loading screen of the game *Chequered Flag*, roughly halfway through loading the pixel data for the second third of the screen. Notice that the top third of the image is complete, but that only some of the pixel rows in the second third of the screen have loaded. Notice also that there is no colour information: this is stored at the end of the display buffer after the pixel data.

The layout of the Spectrum screen is actually quite clever, and designed to make printing text very efficient. If you think a little about the layout, you may notice that each row of pixels in a character cell is separated by 256 bytes (that is, 8 rows of 32 characters). This means that if the address of the first pixel row of a character cell is stored in the HL register pair, then to advance to the second row of the character cell, we merely need to add 256 to the address, which can be done very efficiently on the Z80 with the `INC H` instruction. If instead the pixel data were laid out sequentially in rows, you would use a sequence such as `LD BC, 0x0020; ADD HL, BC`, which would take quite a bit longer to execute (and would corrupt the BC register pair).



Following on from the pixel data is the attributed data, which starts at address 22,528. The attributes for each eight-by-eight character cell are encoded as a single byte with bits 0—2 representing the ink colour; bits 3—5 holding the paper colour; bit 6 holding the brightness; and bit 7 holding the flash value. For example, an attribute value of 75 (which is 01001011 in binary) represents magenta ink on blue paper with bright enabled and flash disabled.

The attribute data is laid out in the obvious manner, one row at a time in sequence. So, the attribute data at print location (X, Y) is stored at address 22,528+32*X+Y.

If the above explanation seems confusing, then you might want to try experimenting with the display, by writing a BASIC program to print a character (perhaps a user-defined graphic) by POKE-ing the pixel pattern into display memory, something like Fig 1.

As written, the program will display the first user-defined graphic at character cell 0, 0. Can you modify the program, so that instead it prints the character to another cell location? Can you POKE a suitable value into the attribute space to change its colour? Can you make the program print the user-defined graphic upside down? So long as the address used in the POKE command, in line 30, is always between 16,384 and 23,295 (that is, in the display area) you will not cause any harm: at worst, you can enter CLS to reset the display. However, if you inadvertently POKE numbers higher up in memory, you might crash the Spectrum and lose your program.

Armed with an understanding of how the Spectrum display is laid out in memory, we can now write an efficient print routine, to display a user-defined graphic anywhere on the display, such as in Figure 2.

```
10 LET p=16384 : REM Location in display to print to
20 FOR n=0 TO 7
30 POKE p+n*256,PEEK (USR "a"+n) : REM Advance by 256 bytes for each pixel row
40 NEXT n
50 STOP
```

Fig.1

```
DISPLAY:      equ 0x4000      ; Start of display buffer
ATTRIB:       equ 0x5800      ; Start of attribute buffer
UDG:          equ 0x5c7b      ; System variable holding address of UDGs

org 0xfe00      ; Address is 65024d

;; On entry:
;;  A contains UDG character to be printed (upper case),
;;  DE contains row and column of print location:
;;  B == non-zero if there is attribute data; and (if so)
;;  C contains the attribute data

PRINT_UDG:
  push bc          ; Save the attribute value
  sub a, "A"        ; A contains character count from first UDG
  add a,a          ; Multiply by 8, as each UDG occupies 8 bytes
  add a,a
  ld b, 0x00        ; Load offset into BC
  ld c,a
  ld hl, (UDG)      ; HL is base address of UDGs
  add hl, bc        ; Apply offset so HL now points to pixel
                      ; pattern for first row of UDG

PRINT_IT:
  push hl          ; Save character address
  ld hl, DISPLAY    ; HL points to start of display memory
  ld a,d           ; Row to print to
  cp 0x08          ; Check if in first screen region
  jr c, ROW_CALC   ; Jump forward, if so
  ld hl, DISPLAY+0x0800 ; HL points to second screen region
  cp 0x10          ; Check if in second screen region
  jr c, ROW_CALC   ; Jump forward, if so
  ld hl, DISPLAY+0x1000 ; HL points to third screen region

ROW_CALC:
  and 0x07         ; Only need lowest three bits of row number
  rrca            ; Move offset into upper nibble and multiply
                  ; by 2
  rrca            ; Upper three binary digits
  or e            ; Apply column offset (lowest 5 binary digits)
  ld c,a          ; Move offset into BC
  ld b,0
  add hl, bc      ; HL contains offset to print position

  ex de,hl        ; Save AT coordinates to stack, swapping with
  ex (sp),hl      ; character address (from stack)
  ex de,hl
```

Fig.2


```

        ld b, 0x08          ; Eight rows of pixels
PLOOP: ld a, (de)           ; Next pixel pattern to print
        ld (hl), a          ; Display
        inc de              ; Advance to next character row
        inc h               ; Advance to next display row
        djnz PLOOP

        pop de              ; Restore AT coordinates from stack

ATTRIB_CHECK:
        pop bc              ; Restore attributes
        ld a,b
        and a

        ret z              ; Exit if no attributes to update

COLOUR_IT:
        ld h,0              ; Load row into hl
        ld l,d
        add hl, hl          ; and multiply by 32
        add hl, hl
        add hl, hl
        add hl, hl
        add hl, hl

        ld a,l              ; Apply column offset
        or e
        ld l,a

        ld de, ATTRIB      ; Finally add offset to start of
        add hl, de          ; display buffer

        ld (hl),c          ; And update attributes

        ret
END:

```

As you may notice, the downside of the Spectrum screen layout is that it is an involved process to work out the address in the display buffer that corresponds to a particular print position. However, for most printing operations, this is computed rarely, making it a worthwhile trade-off to have fast character printing.

Based on a crude timing experiment, the above routine is around four time faster than the BASIC equivalent. I therefore tried replacing the BASIC print commands in the Rabbit Run

game with calls to this routine—via a suitable wrapper code, something like:

```

PRINT_CHAR_WRAPPER:
Ld a, 'A'
Ld BC, 0x0000      ; Attribute data
Ld DE, 0x0000      ; Print coordinates
call PRINT_UDG      ; Call custom print routine
ret                ; Return to BASIC

```

—into which the UDG, attribute value, and coordinates are POKE-ed before each USR call.

Unfortunately, the version of Rabbit Run that uses this optimised print routine is not noticeably faster than the original BASIC version, which is disappointing and is probably because of the overhead of having to POKE up to five values into memory before each USR call.

Undaunted by this setback, I looked at ways to port more of the time-critical elements of the game to machine code and quickly came to the conclusion it would be worthwhile to re-write the main game loop in its entirety in machine code: having written this print routine and having some integer arithmetic routines to hand from the machine-code version of Zeller's Congruence (see previous article), it became primarily an integration activity.

Looking through the BASIC listing of Rabbit Run, I noted a number of functions for which I needed a machine code version:

- To generate random numbers – for example, to position new food and molehills;
- To produce game sounds;
- To read the keyboard, so that the player could move the rabbit.



There are various random-number generators available from the Z80 Heaven website. I selected one that produced 16-bit random numbers, as this was flexible enough to cover the different uses in Rabbit Run. In particular, by treating a 16-bit random number as two 8-bit coordinates and then using the DIV8 routine from Zeller's Congruence to work out the remainder after dividing the coordinates by 24 and 32, respectively, I can quickly create random coordinates for new molehills and food.

Making Noise

To produce game sounds, I used a ZX Spectrum ROM routine, called BEEP (at address 0x03b5 and described on page 11 of Logan and O'Hara's "The Complete Spectrum ROM Disassembly"), which takes two inputs similar (though not quite the same) to the BASIC BEEP command. I wrote a short wrapper function for this, to play a sequence of sounds—for example, for when the rabbit dies - based on some pre-computed parameters, as shown in Fig 3.

Input

The ZX Spectrum ROM has several different routines for reading the keyboard and these are described in detail in Toni Baker's book "Mastering Machine Code on Your ZX Spectrum". However, none of them does quite what I wanted and as I only needed to check four keys, I decided to write my own routine. The ZX Spectrum keyboard is divided into eight sections and the status of the keys (that is, pressed or not) in each section is determined by reading the appropriate port with IN and testing the value of the corresponding bit. For example, the 'Q' key is tested by looking at the value of bit 0 of port 0xfefb. It will be reset if the key is being pressed, and set otherwise. The code snippet in Fig 4 tests if the 'Q' key is pressed:

Having written or integrated these different functions, I was able to write the main game loop and test it.

Following a bit of debugging in Spectaculator, I got a working version of Rabbit Run. However, it ran far too quickly to be playable. The rabbit moved three or four squares whenever I pressed a direction key, and the fox raced across the screen to catch it in around a second.

Fig.3

```
;; One entry HL points to the start of a list of parameter
pairs for BEEP,
;; terminated by 0x0000. This routine corrupts most registers.
.
ld e, {hl}          ; Retrieve first BEEP parameter
inc hl
ld d, {hl}
inc hl

ld a, d              ; Check for zero, which indicates end of
or e                 ; list and return if so
ret z

ld c, {hl}           ; Retrieve second parameter
inc hl
ld b, {hl}
inc hl

push bc              ; Move BC into HL and save list pointer
ex (sp), hl

call                 ; Call ROM routine

pop hl               ; Restore list pointer

jr
```

Fig.4

```
;; Check for up - 'Q'
UP:  ld a, 0xfbf      ; Read status of port 0xfefb
      in a, (0xfe)

      bit 0, a         ; Check if 'Q' is being pressed

      jr z, MOVE_UP    ; Move rabbit up, if it is
...

```


This was a good outcome, as the reason for porting the game to machine code was to improve the speed: the next step was therefore to refine the timing of the game, which I did in three stages.

First, I added a HALT statement at the start of the game loop. The HALT command tells the Z80 to wait for a system interrupt, which is issued fifty times per second on the Spectrum at the beginning of a screen re-draw. As well as producing predictable timing, putting HALT at the start of the game loop has the second advantage of making sure the graphics are drawn at the beginning of the screen re-draw—before the scanline gets too low down the screen, which would cause flickering.

With the HALT statement inserted, I have a timing reference for the game loop, which cycles fifty times per second, whether or not the fox was in play—so no slow-down. As I only want the fox to be able to move about 6 cells per second, I introduce a conditional check that only lets the fox move every eight game loop iteration.

Finally, it was not easy to press a direction key for just one fiftieth of a second, so the rabbit tended to move multiple squares when a key was pressed, which made for poor game play. I therefore introduced a four-cycle delay whenever the rabbit moved before the keyboard would be checked again. This provided a good balance with the player both able to quickly move the rabbit and precisely navigate between molehills.

With these timing changes implemented, the game has the features, difficulty and dynamism of the original BASIC version, but without the timing problems and slowdown. The machine-code version of the game also occupies just under 1 kilobyte of memory (not including the few Spectrum ROM routines that I used).

You can download the source for the game from The Spectrum Show website, along with a TZX image to play in an emulator. There are lots of ways in which this game could be improved, so why not give it a go. It will help you validate your growing machine-code skills and, once you have something you are happy with, you can share it with your friends—just like people used to do in the 1980's!

In the next issue we will be looking at some of the other programming languages that can be used on the Spectrum, focusing on a language called FORTH, which fits somewhere between the ease of BASIC and the performance and compactness of machine code.

Downloads from this series can be found at www.thespectrumshow.co.uk

More from George next issue.

A dark-themed banner for the Spectrum Computing website. At the top center, the word "SPECTRUM" is in large white capital letters, with "COMPUTING" in smaller white capital letters below it. A rainbow-colored horizontal bar is positioned between the two words. On the left side, there are three blue rectangular buttons with white icons and text. The first button has a magnifying glass icon and the text "ZXDB DATABASE POWERED SOFTWARE SEARCH". The second button has a checkmark icon and the text "CLASSIC GAMES, HARDWARE, MAPS AND MAGAZINE REFERENCES". The third button has a calendar icon and the text "UPDATED WITH CURRENT SOFTWARE RELEASES". At the bottom center, the website address "spectrumcomputing.co.uk" is written in white. On the right side, there is a faint, stylized image of a person's face in profile, looking towards the left.

SPECTRUM
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spectrumcomputing.co.uk

the DARK

Oleg Origin 2016



The Dark, originally released in 1997 by Oleg Origin, was re-released in 2016, and what game this is. From the very first load, the game impresses with a spoken story accompanied by excellent pictures and an understandable voice even on a 48k machine.

Onto the game then and here we have a very impressive 3D action game that many Spectrum fans have dubbed the Speccy

version of Doom. The game is not actually like doom, but the comparison comes from the graphics style and gameplay. Yes, a full screen first person shooter on the Spectrum, I can hardly believe my eyes.

You travel through the 3D world looking for the exit and these usually need a key to operate. Keys are represented as hand prints in the walls, but your first task is to get a better weapon than a pitch fork.

You are not alone in this world though and there are other beasts that are not happy with you being there. They wander about and when you get in range, they charge towards you with deadly intent.

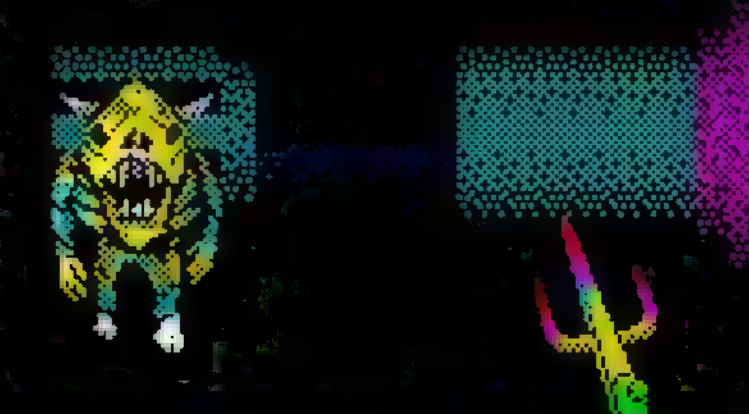
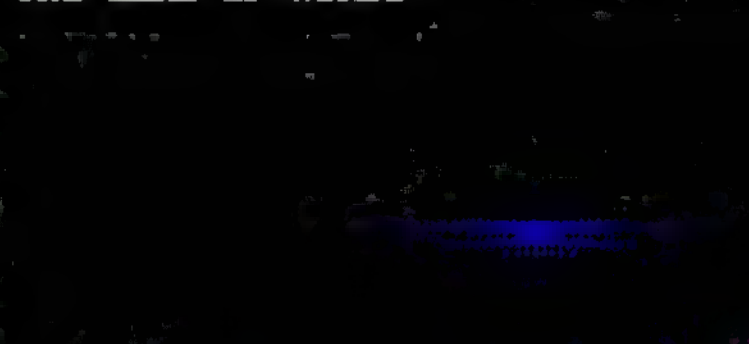
A pitch fork is not the best weapon and soon you should find a hand gun. This makes dispatching the enemies much easier as long as you don't run out of ammo.

You still have to keep out of there way, so it's dodge and attack strategies. Not as easy as it seems, and I didn't get very far on my first few attempts, or in fact my attempts after that too until I located the gun.

You can view a map and this indicates keys and exits, as well



MANY YEARS AGO THE ARMY OF DARK FORCES HAS CROSSSED THE BORDER OF THE LAND OF WINDS



HEALTH 80

ARMORS 80



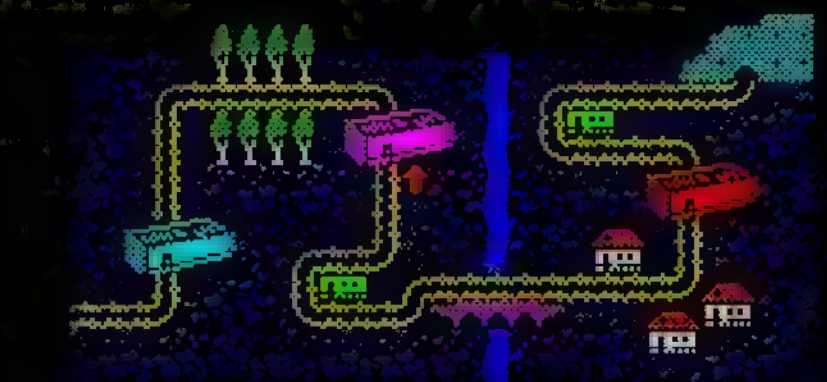
as trees and other items. This is essential if you want to complete a level. The game pauses when viewing the map, so you can take a breather here as well.

Back in the game and the graphics are great. Very colourful, and although there is not the full 3D walls like Doom, the effect is excellent. You hardly get a chance to view the scenery due to the enemies. The scenery consists of walls, trees and other objects, all coming together to give a great effect.

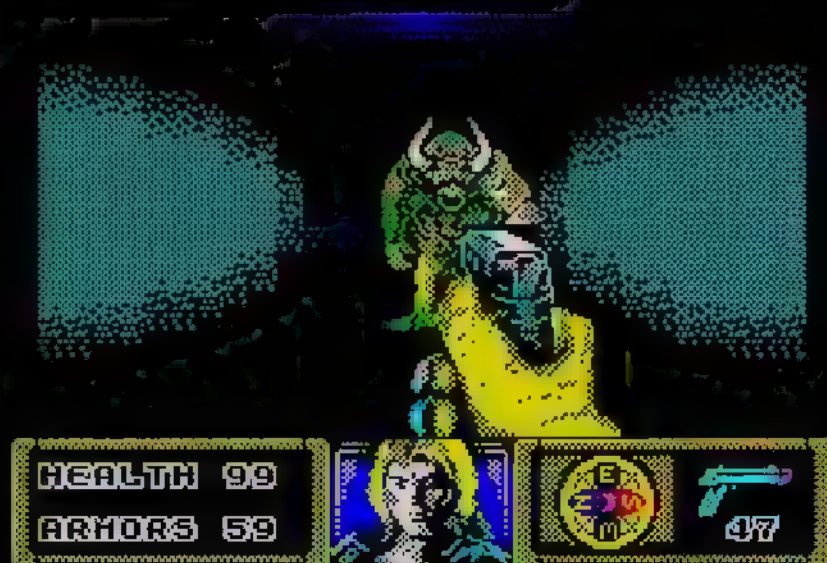
Sound is used well with background effects and footsteps as well as firing and death sounds. Control is by keyboard or joystick and is very responsive. That's just as well really considering the amount of enemies around.

This is not an easy game, at least for me, but it is well worth a play just to see the Speccy playing a 3D shooter.

Definitely one to play and a brilliant achievement on the humble Sinclair machine.

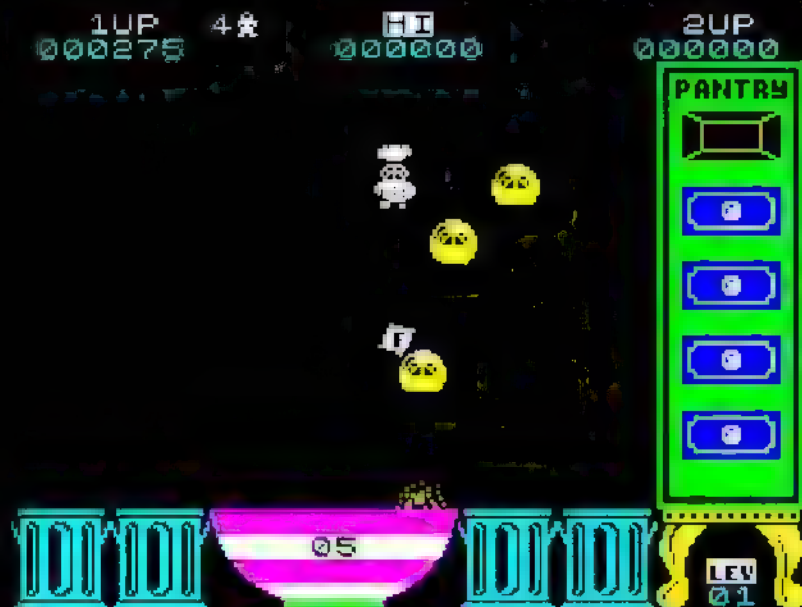


MONSTER APPROACHING!



Cookie

Ultimate Play The Game 1983



Is there anyone who doesn't know Cookie?

In 1984 Ultimate Play The Game released four games onto the market to announce their arrival and pushed game quality out of the dark ages. Cookie was one of these 16k titles and was also released on ROM cartridge.

The idea is simple and yet expertly executed, it was clear the company had arcade links, and the other three games were also as playable.

You control a chef trying to bake a pie - yes that simple. To do this you have to herd the ingredients into the bowl at the bottom of the screen using just your bags of flour. Each set of ingredients appear in turn from the cupboard

on the right and you have to force them into the bowl. Ingredients can only get in the bowl if they have been hit by flower, so you can't just let them float in on their own.

Each ingredient is progressively harder to beat and there are other things to avoid too, like the bin monsters throwing bits of garbage at you. If any of the garbage gets into the bowl then the ingredient count goes up and you need ten items before you can move on.



A count of the required ingredients is displayed on the bowl and once they are all in, it's time for the next lot. If you manage to get all five ingredients into the bowl, the pie is baked and the game begins again.

The graphics are top notch. Smooth movement and well defined, easy to control and they really suit the game. Sound is also good with occasional music and nice effects throughout.

Like the early ultimate games, they have a certain charm to them, and they are certainly games you keep going back to.

A golden oldie then, that's definitely worth a quick play.

STARCLASH

Derek Brewster 1983

This early shoot-em-up was written by Derek Brewster, a well known programmer who later went on to the *Code Named Mat* games as well as *Kentilla* and *Curse of Sherwood*.

This though is a version of the arcade game *Astro Fighter*, a simple, yet tricky little shooter from 1980.

Waves of aliens move down the screen and to progress to the next level you have to clear all aliens before they reach the bottom. There is no second chance; should they reach the bottom, they all respawn again.

If you are successful, the next wave begins with different aliens and different movement patterns. As the aliens get less, they move faster, making things even more difficult, not to mention they fire back at you and of course there are meteors to worry about too.

The different aliens are shown at the top of the screen, with the current wave flashing. The attack waves move in the same way as the arcade machine, making them tricky to hit.

The graphics are quite basic but move smoothly and the sound is very good for a 16K game. There is a constant warble sound along with firing and explosions.

Control is good but the game does slow down when there is a lot on screen.

For a 16K shooter, this is a nice little pick up and play game. Easy to get into, easy to control and quite addictive.

SCORE 000140 HIGH 000000



SCORE 000350 HIGH 000000





LOCK AND LOAD

SOFTWARE PROTECTION THROUGH THE YEARS

Wherever there has been something that can be copied, especially software, there has inevitably been copy protection schemes. They have been in place since the early days of Spectrum gaming and were created to prevent the one obstacle that was hindering many companies: piracy.

Overtime, they became more and more complicated, but occasionally, the schemes themselves would get in the way of legitimate users, anyone remember Daley Thompson's Decathlon?

Protection began in a very simple way, disabling the break key. This method was relatively simple at first and involved hacking the system so that if BREAK was pressed, the system would crash.

Examples of this kind of protection include Horace Goes Skiing and Incentive's Millionaire. It was however incredibly easy

to bypass and you could just issue a MERGE command to see the BASIC listing before the loader started.

Most copying software of the time would be able to copy this type of program. Since the data was saved with the ROM routines, it was also incredibly easy to just make direct tape to tape copies.

Another sneaky method was to try and fool the user in thinking the game was loading machine code when it was in fact loading BASIC. A good example of this is Transylvanian Tower

by Richard Shepherd Software.

The game begins loading with the BYTES prefix, but is actually BASIC. You can break into the game code by holding down a certain

key combination.

Losing Your Head

The next stage was headerless data blocks.

A slightly more advanced method from around the same time modified the data so that it was impossible to load the code direct from BASIC, instead requiring a special piece of machine code.

Usually code was loaded in two sections, the header – which contained details about size and location, followed by the data block itself. Without a header though, straight forward copying was difficult.

This kind of loading can be seen in 3D Deathchase.

While this protection scheme was difficult to break for casual users, peo-



ple with a basic knowledge of machine code found it easy to crack. Most often, you could just use the MERGE command to prevent the game from running straight away after loading. From there, you could inspect the BASIC listing and try to figure out how the game was loaded. The Key (a software copying program) could also copy most software that used this technique.



Another early trick, only suitable for programs written in BASIC, involved putting invalid control codes inside the listing. While the listing itself would run correctly, it would stop listing when the invalid control code was reached.

Other devious tricks relied on the way Sinclair BASIC worked. Numbers were stored twice: once in the floating point format used for calculations, and once in ASCII format for printing. Clever programmers changed the ASCII values but kept the floating point numbers. The computer would execute the correct command since it relied on the floating point number, but the listing used the ASCII number, so the incorrect value was displayed on the screen.

Defeating this protection would require the hacker to list the proper values using the PEEK command,

something that would require a good knowledge of BASIC addresses to achieve.

Things began to get a little more technical as the industry evolved and special loaders were used instead of the standard Sinclair ROM routines.

Land of the Loaders

Speedlock

Speed loaders were created to load files faster than the original ROM routines and act as protection at the same time. The most infamous of these was Speedlock which was programmed in 1983 by David Aubrey-Jones and David Looker. Ultimate Play The Game, US Gold and Ocean were among those who used Speedlock extensively for their programs.

This loading scheme had a distinct sound with a set of audible 'clicking' tones in the leader tone of the data. This, and the high speed, made Speedlock very difficult to copy using tape to tape. However, copiers for Speedlocked programs soon cropped up, such as the Lerm tape utility.

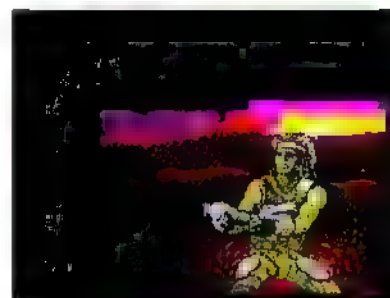
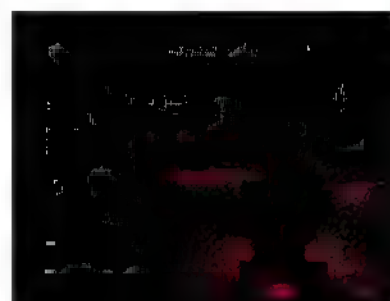
When originally released this also caused many players to complain that their games simply would not load. This was usually down to miss-aligned tape heads, but with such a high degree of accuracy needed, it just annoyed the paying public.

Alkatraz

Alkatraz was another popular protection scheme and had the ability to

animate loading screens during the load process. Examples of this loader can be seen in Cobra, Bobby Bearing (where the game's plot is explained in a scrolling message) and Trantor The Last Storm Trooper.

Like Speedlock, it was difficult to copy using tape to tape, but also like Speedlock, copier programs soon cropped up for it.



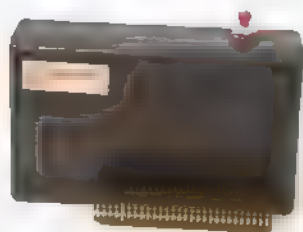
Bleepload

Bleepload was a strange loading scheme, because it loaded programs in blocks of 250 bytes each. The amount of blocks and the gap between each block made Bleepload programs very difficult to copy using a standard copy program. Examples of this are Gunstar and The Pawn, as well as many firebird games.

This block loading system also had a serious disadvantage: the separate blocks meant that most of the tape was taken up by leader tones, which slowed down loading considerably.

As the schemes became more and more difficult to crack using software programs, it was time for another approach – hardware.

Bring On The Hardware



All schemes were null and void when the Multiface arrived from Romantic Robot. It could copy all programs released just by pressing a single button on the device. Once halted, the user could then save all of the RAM to tape. The built in monitor also meant that all games could be inspected and hacked. This was a great problem for the software companies, as it allowed copying of any program to occur simply through the press of a

button. The only game known to defeat Multiface copying is Super Wonder Boy by SEGA, but this was mainly because the title was multiload and therefore unsuitable for normal Multiface copying.

With software and now hardware schemes being defeated, the companies turned to yet another option, off-tape protection.

Reading Aloud

The most notable protection scheme was the Padlock scheme used by

photocopiers were very expensive and certainly not within the reach of the average user. However, the tape itself was sometimes unprotected (such as with Jet Set Willy), so it was easy to go in and POKE the code after the game had loaded. Software Projects would not offer replacement cards, so if the card was lost, the game was unplayable.

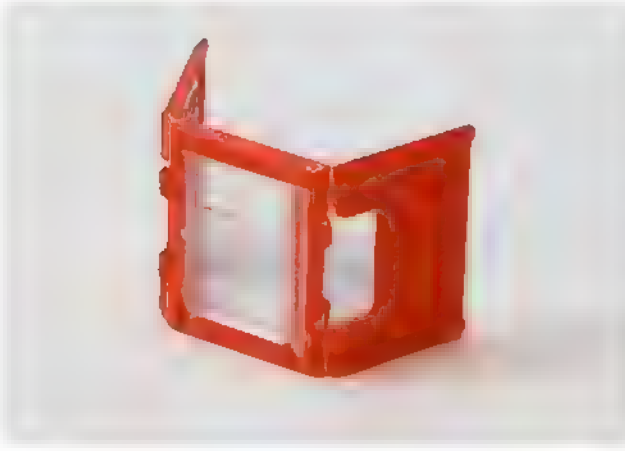
Users also circumvented this by hand writing out all of the codes and colours, and this could then be easily photocopied.



Software Projects. This involved a coloured card which contained codes for the game. When the game was loaded, it asked for a code on the card. If the code was wrong, the player was given another chance to enter the correct code before the computer reset itself.

The tape itself was easy to copy, but the coloured card was difficult to reproduce at the time since colour

Most Annoying Lump Of Plastic Ever...



Lenslock!

This was perhaps the silliest type of protection scheme. It used a physical device which consisted of a bit of plastic inset with a set of prisms. A scrambled code would appear on the display and the Lenslok would be used to de-scramble the code.

Lenslok would not work on televisions that were too large or too small and the adjustment instructions originally supplied with them was unclear. The

biggest fault was that occasionally, the Lensloks would be mixed up and the wrong one would be shipped with the wrong tape, resulting in an unplayable game. Lenslok also increased the manufacturing costs of the game, which resulted in less profit for the companies.

There were other schemes in existence, and different versions

of the ones mentioned here.

Some relied on words on the inlay or in the manual of the game. These particu-

lar types were easily circumvented, and like all protection schemes that came before, proved that they only stopped the playground copiers, and had very little impact on mass piracy.

Today, if someone wanted to copy your game, they could and there

was very little you could do to stop it.

Top Secret

Modern games now come with internet protection or require always on connection to the company's servers – which wasn't available during the Spectrums life. This made it necessary to write, modify and invent software protection.

A special mention must also go to the device created by JLC that was blocked by the Ministry of Defence because it was too good and could be used to protect data they may want to get at.

From what is known, it consisted of a small chip inside the cassette tape that had to be there for the software to run. A second signal is then imprinted underneath the main data on the tape that checks for the presence of the chip.

Because the MOD confiscated all material relating to this, the public will never really know what it actually did.

From the data available though, unless

MoD bans software protection

A BARNSELEY-based cassette duplication company has come up with an answer to the problem of software piracy. Yet the technique may never be used by software houses to protect their programs.

JLC Data has patented a unique system which prevents, not only commercial piracy, but also home tape-to-tape copying. However, the patent has had to be withdrawn and the idea shelved following a secrecy order which was served on JLC by the Ministry of Defence.

"We have had the secrecy order placed on us which spells it out in plain English" —

the device continually checked for the chip, it would be easy to copy once the game had been loaded into memory.

Copy protection will always be around despite the fact it is often only valid users who are affected by it, and it is often overlooked in the modern world of SD card interfaces and emulation that load games instantly. I bet there are few of you who actually sit down and load Spectrum games at normal speed.. and to be honest I don't blame you.. it was interesting to see some of these loaders in action though, especially Alcatraz with it's animation features...

Something often overlooked when emulating older machines.



Reviewing the games
that came with the
Vega console

..but without instructions!

A.T.A.C.

This game looks great, and luckily there is little need for instructions; it's a horizontal shooter.

You fly a helicopter that looks very similar to Airwolf, and have to fly across a parallax scrolling landscape from right to left. You have to keep the copter in the air by continually pressing the up key, which is a bit of a pain.

Enemy helicopters and planes come at you from both sides, and you have to spin around to take them out before they crash into you.

You have a shield that slowly depletes if any enemy hits you and a fuel limit too, and you must also stay away from the ground or you just explode.

If you manage to complete a stage, there is a bonus round where you shoot holes in a wall and then shoot the moving vehicles - not much fun.

The graphics and scrolling are great, and this accompanied by some nice sound effects make for a very playable game, ideally suited to the little handheld.

The game is not too hard, letting you progress far enough to want to try again, but I could see no way to replenish your shields, at least until many plays later, then I noticed I had been shooting them!



DEMONSLAIR

What a terrible, un-controllable game this is!

You are first asked to enter your name, so this means pulling up the Vega keyboard and entering your initials. This is before you can even get into the game!

The first and major problem is the control system, and unlike most of the games on the Vega, this one has not been setup to use the buttons. This means that to jump, you have to press the UP on the D-pad!

This makes getting anywhere a complete nightmare, and soon puts you off the game. It is very hard to jump and move left or right at the same, so more often than not, you will fail and get hit by an enemy.

You control a wizard who has to collect four letters of a word on each screen. Once all letters have been collected - in the right order, a key appears. Collecting this will then let you move to the next screen via a door.

The graphics are large, colourful and move well, but controlling them is impossible. Trying to time your jumps to miss the enemy sprites is tricky, and many places on the screen are impossible to get to unless you bump into one.

There are a large number of sprites in the game, all drawn well with limited animation, and the backgrounds are nice too.

Sound is a let down too. No sound for walking or jumping, just for collecting a letter and when you bump into nasties. Bump into too many, and you lose a life.

All in all, a bit of a mess, that could have easily been improved by making one of the buttons act as the UP command.

On a side note, when trying this game in an emulator, the Kempston option also seemed broken, and I had to use the keyboard to grab the screen shots!



GRUMPY OGRES

Adventure Page

It is not often I get the time to immerse my old bones into a large, deep adventure these days, but accidentally I find myself in such a position.

I was skimming through some adventure titles looking for something I could play and subsequently write about here, and I happened to stumble on Mordon's Quest from Melbourne House.

Those lovely people at MH gave us the Hobbit and, via Abersoft, Adventure One - renamed to Classic Adventure.

Mordon's Quest however, is a later game and I was intrigued to find out what it was like, and I was very pleasantly surprised. Take the opening text, very atmospheric, and it dragged me in

mystical figure appears and tells you he is Mordon. After some gibber gabber, he offers you a quest, and then the journey really begins.

Revisiting an item in the house will whisk you off to the next section, the Jungle.

The game is not without it's problems though, and some familiar commands do not work. For example, to get a description of a room, you would normally type L or even LOOK, but this game recognises neither. Instead you have to type WHERE AM I to get the location described again.

There is also one of those most hated elements, a maze, and you will have to make a few leaps of faith here before you can move on.

You awake from a deep, troubled sleep, to find you have fallen from a large four-poster bed.....

You are in the master bedroom, despite the richness of the bed and the oriental carpet underfoot, the room is sparsely decorated. An indefinable atmosphere permeates the room, as if some great tragedy once occurred here. Tall sash windows face north and west. Large double doors open to the south.

Present in 40 column text, the descriptions are wonderful and really set the scene, and things begin to unfold as you play.

You start in a house and after a bit of exploring, climbing and wandering about in the mist, a

The thing that makes this game though, is the vast amounts of text and detailed descriptions. They remind me of old online text games where space was not an issue and the authors could write masses of details to keep you en-

thralled.

I know text only games are not everyone's cup of grog, but I really enjoyed playing this game, it was such a refreshing change from the usual YOU ARE IN A CAVE.

The game is large and will keep you challenged for many many hours, if not days or even longer.

For any adventure fan, I would also point you in the direction of a great documentary called Get Lamp.

This covers the very start of adventuring and incorporates interviews with many of the famous people involved. Scott Adams tells the story of Adventure International and there is plenty of Infocom material.

You can buy this from the official website (www.getlamp.com) or watch it on Youtube. I chose to buy it because I wanted to show my appreciation for the tremendous effort that went into this film.

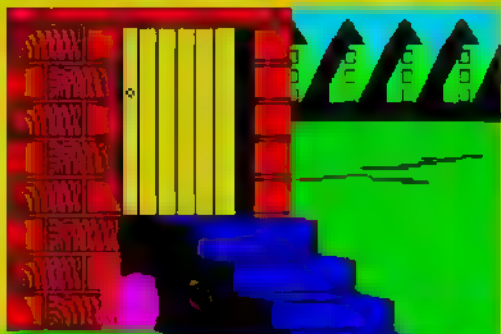
Moving on to another Melbourne House game, Castle of Terror.

This is such a different beast altogether, and one I am not drawn to.

The graphics are nice, but the game is just odd. There are many reported issues and seemingly that game has never been completed.

I first found a problem when I entered the house close to the start. In here is a table, on the table is a knife. Picking up the knife was fine, then after some walking about and getting to where I re-entered the house and re-examined the table. The knife was back there!

I picked it up, and it appeared in my inventory. I examined the table, and the knife mysteriously was back there!



and a stone mill is to the east. Steps lead up to the mill in front of you. To the north and west lies the village. A grinding sound comes from inside

There are also items drawn in the pictures that are key to the game, but are not in the description. For example, stood outside the mill there is a magenta thing next to the steps. This is a barrel that you have to examine. It is not in the description!

After this discovery, I then went about examining everything in every image - but it didn't help me very much.

Even when you get inside the mill,

there is a lantern. No mention of this in the description and it isn't even drawn on screen! I had to find this out by taking a cheeky look at the solution text!

That is no way to treat adventurers. All this accomplishes, it a hatred of the game and players soon getting board of having to guess what or where things are.

It was while reading the solution that another sneaky trick emerged

- there are two identical locations in the game (the Mill) each containing different objects!

I then ventured into the local pub where I met a man in need of a drink. Luckily I had helped some locals dig a field and they had given me a coin. Haha... BUY

ALE then informed my I had no money! Yet another mysteriously vanishing object.

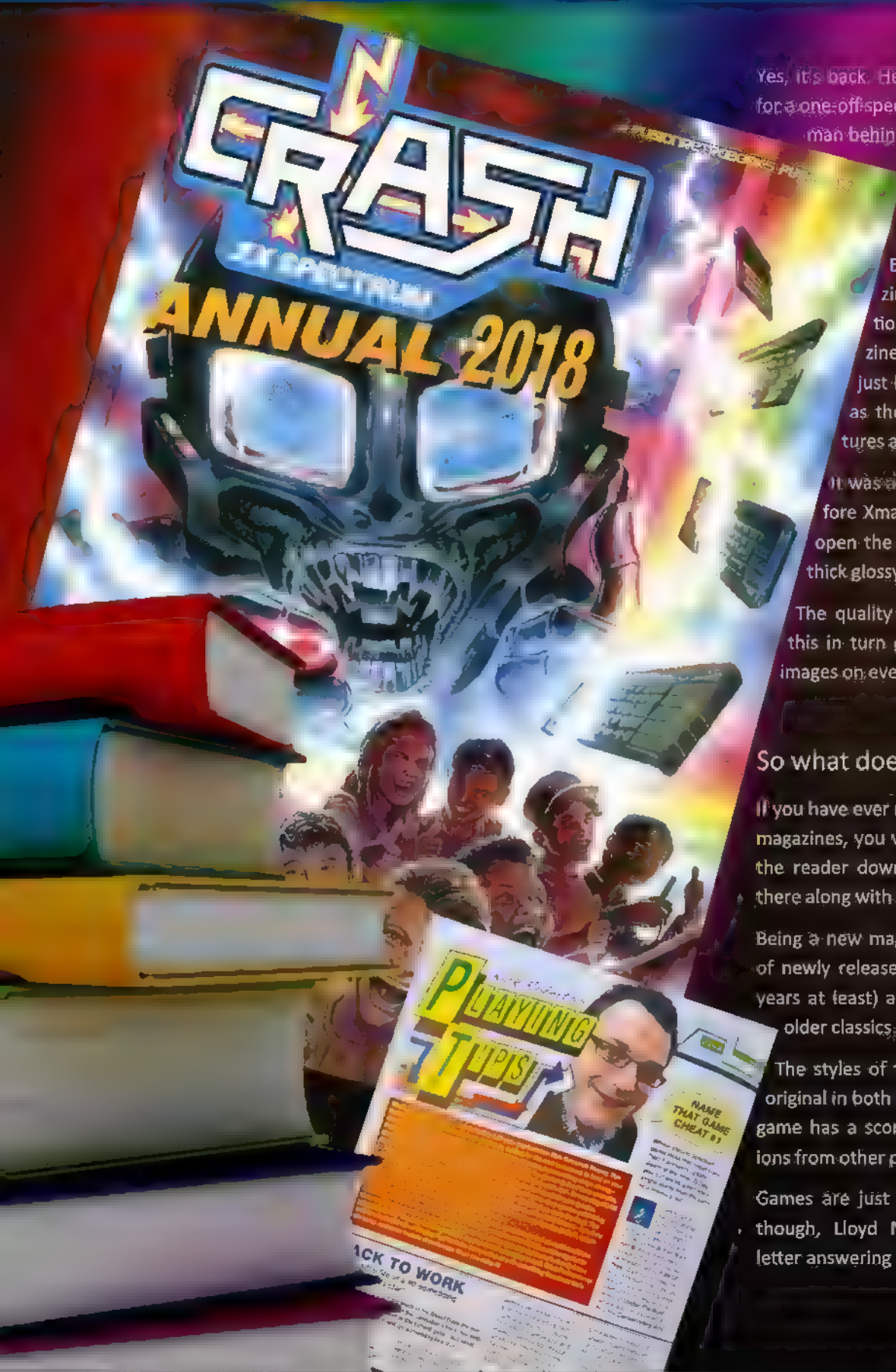
This was all too much, and having spent a good hour getting nowhere, I reset the emulator and went for a tankard of ale myself.

Melbourne House produced a mixture of games, the great and the awful I encountered here!

Oh well... onward to my next pint and some more adventures.



Ale. I don't know how to do that. I don't know how to do that. You have no money with which buy ale.



Yes, it's back. The best Spectrum mag returns for a one-off special in 2017. Chris Wilkins, the man behind so many other books about the Speccy, has produced a fantastic effort to bring this classic magazine back.

But hold on, why is a magazine featuring in the book section? Well, it isn't really a magazine, it's a hard back book that just happens to be the same size as the original magazine and features all the content of the original. It was a real treat to get this just before Xmas, and it truly was special to open the parcel and start reading the thick glossy pages.

The quality of the paper is superb and this in turn produces crisp and colourful images on every page.

So what does it contain?

If you have ever read any of the original Crash magazines, you will know, and it does not let the reader down. All the old favourites are there along with loads of game reviews.

Being a new magazine the game reviews are of newly released games (over the last 5-10 years at least) although there is a look back at older classics.

The styles of the reviews are just like the original in both layout and writing style. Each game has a score along with different opinions from other people.

Games are just a part of this great release though, Lloyd Mangram returns for some letter answering and even the Adventure Trial

get a few pages to review newer romps.

There are also special features covering the Spectrum Next, New hardware, Spectrum art and even a feature on how the original Crash magazine was put together all those years ago.

Crash Smashes make a return, with several games getting this accolade, and to my surprise the strategy section is also present.

The Hall of Slime, playing tips, game maps and developer diaries make up the rest of the content.

As with the original, there are plenty of adverts, and this makes it feel more authentic. Crash was full of adverts for all kinds of Speccy related things, from games, hardware, services and other magazines.

This brought back many happy memories of rushing back from the shop, clutching the new issue, running upstairs to my bedroom and pouring through every page.

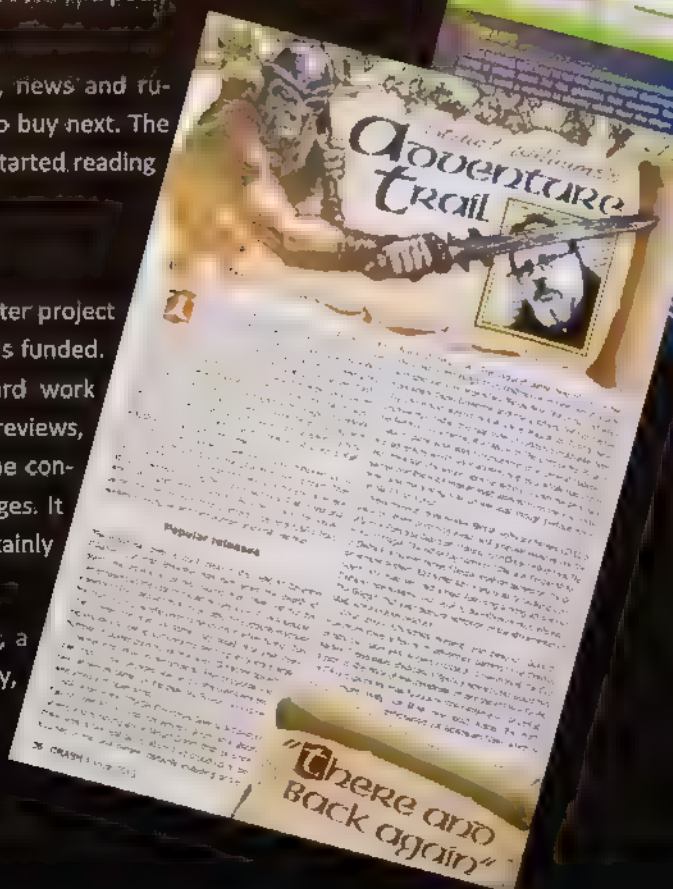
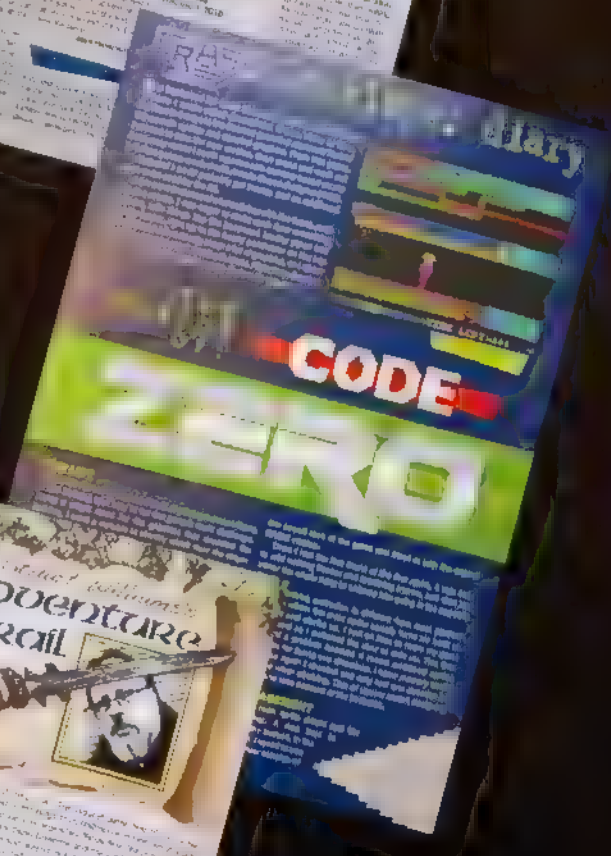
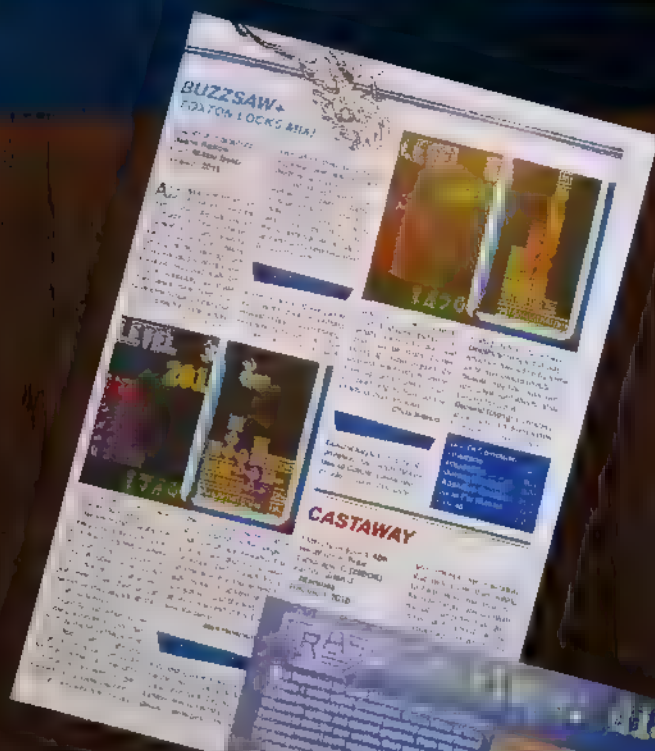
Checking out the game reviews, news and rumours, and making plans what to buy next. The same feeling came back when I started reading this - incredible.

Yes, Loony Jetman is back too!

This book began life as a Kickstarter project and it was no surprise that it was funded. That though was when the hard work began for Chris. Collating all the reviews, producing the layouts, editing the content and wrangling all those images. It was a superb effort that has certainly paid off.

A fantastic piece of history then, a return to the heyday of the Speccy, and one definitely worth buying.

Buy it now.



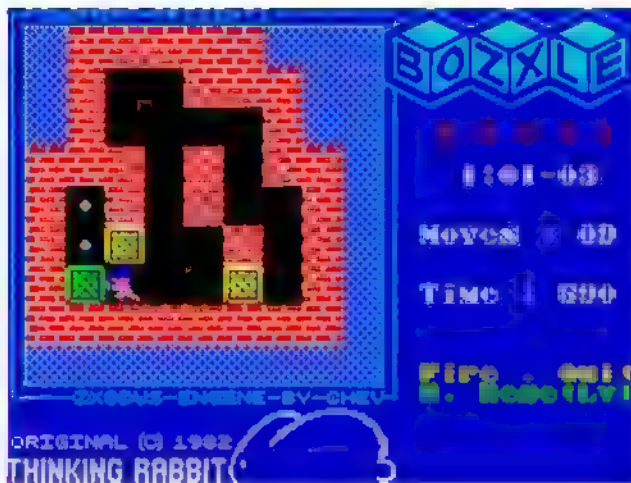
SPECTRUM MEANS COLOUR

GAMES BY ANDREW HARRIS

Image by Dimidrol

THE FINAL PART BY PIOTR SZYMANSKI

Welcome to the third and last part of journey through colourful Spectrum games.



BREAKING THE HARDWARE LIMITS

The hardware colour limitations can be overcome by a skilled programmer. There are many Spectrum games where you can see more than 2 colours inside a character square. This effect, called rainbow graphics, was often used for ornamental purposes on the title screens or high-score tables. Things changed in 2011 when Andrew Owen developed the ZXodus engine. It allowed you to display multi-colour graphics (an attribute for each pixel line) on an area of 18 rows and 18 columns. This engine was used in a game Bozxle based on Sokoban.



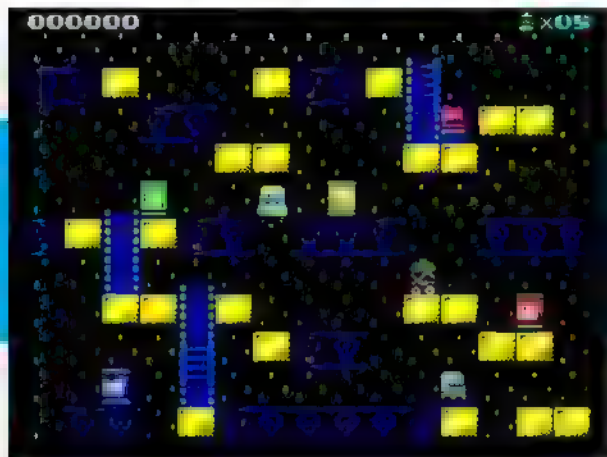
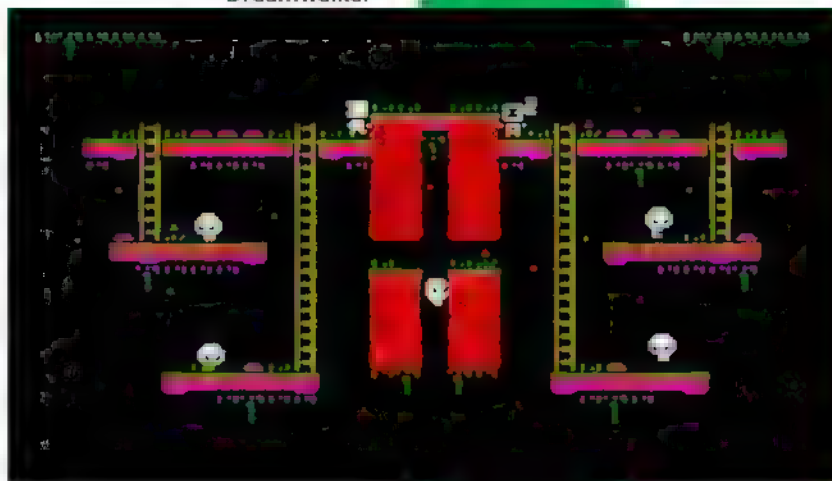
It was a great achievement for the Spectrum, as it allowed for more complex and colorful graphics than the hardware could normally handle. This was a significant step forward for the game, as it allowed for more complex and colorful graphics than the hardware could normally handle. This was a significant step forward for the game, as it allowed for more complex and colorful graphics than the hardware could normally handle.

FEATURE

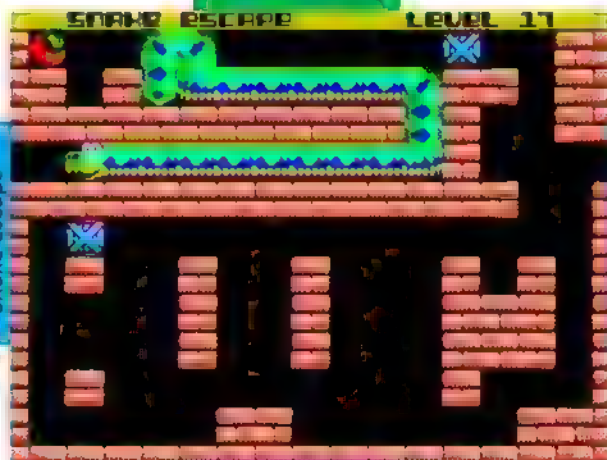
The next step was the Nirvana engine, developed by Einar in 2013. It was bicolour engine (an attribute for every 2 pixel lines) and allowed you to display rainbow graphics almost full screen: 22 rows and 30 columns. Nirvana+ released 2 years later enhanced available screen area to 23 rows and 32 columns.

The Nirvana engine was used in Dreamwalker, El Stompo, SunBucket, MultiDude and Stormfinch. There are also 2 games using Nirvana+: Snake Escape and Pietro Bros.

Dreamwalker

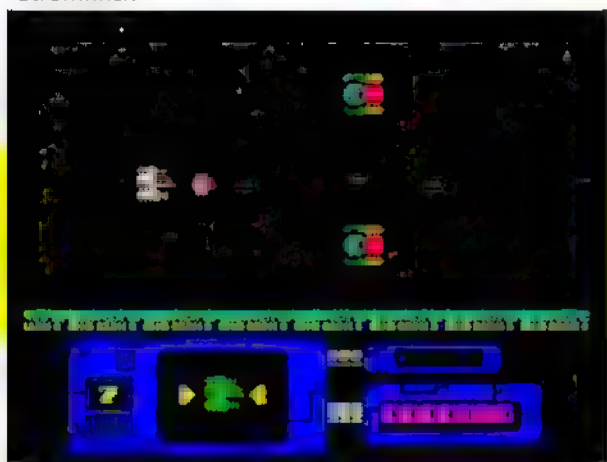


SunBucket

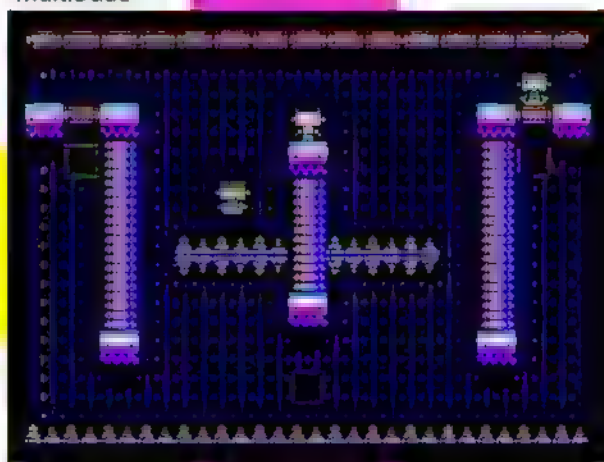


Snake Escape

Stormfinch



MultiDude



WHEN COLOURS DON'T LOOK GOOD

Colourful Spectrum graphics are often pleasant to look at. Often but not always. Sometimes authors try to make their games as colourful as possible but the result is a colourful mess.

Probe Software did an excellent conversion of Turricon but the sequel was converted by an other team, Enigma Variations. It wasn't a good choice. Graphics in Turricon II are colourful but they hurt player's eyes.

Merlin by Mike Westlake at the beginning looks great. The main character is big and colourful, background graphics are detailed, animation is quite smooth. But after a while you'll notice that Merlin and other sprites are transparent and blend with background objects. This "feature" spoils the fun and it's also present in later Mr. Westlake's games Pieces of Eight and S.A.S. Combat Assault.

In 1984 Thor released 3 games based on a fable: Jack & The Beanstalk, Giant's Revenge and The House Jack Built. All of them have colourful but also amateurish and ugly graphics. It seems that the authors, Steve & Chris Kerry, were just learning how to write a good game because their later titles are much better.

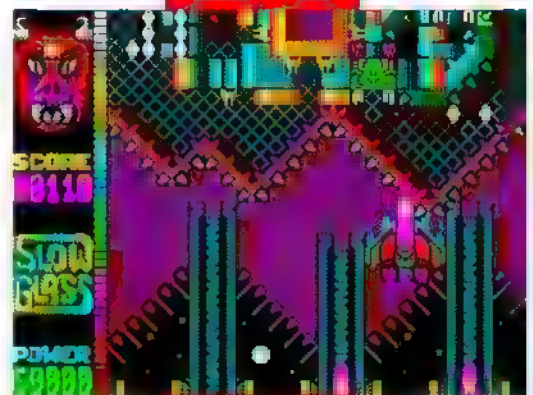
Slowglass is a Spanish shoot'em up by Manuel Dominguez and Alberto Perez. This unreleased (but available to download) title is a perfect example of a game with too colourful graphics overloaded with details. It's really hard to enjoy a game when you can't see what is going on.

In the last few years The Death Squad released many games for Spectrum. They are easily recognizable because of their graphics style which sometimes looks good but sometimes it doesn't. Willy The Wasp 2 belongs to the latter category - the graphics are garish and ugly.

Arkanoid 2 by Imagine is one of the best Breakout clones. The graphics were improved since the first Arkanoid but a few levels are very difficult to play because of the chosen colours. Those levels look better on a black & white TV - maybe the game authors were using this type of TV during development?

SUMMARY

There are, of course, many more colourful Spectrum games but it's almost impossible to list them all (and you probably would be bored with the endless list). I hope that the chosen examples are enough to prove that Spectrum games don't mean monochrome games.



NEW RELEASES ON REAL MEDIA

SPACE Disposal

The universe is full of junk

Do you have what it takes to
clean it up?



Toofy In Fanland+



Code Zero



Deep Core Raider+

ALSO AVAILABLE

Games from Paul Jenkinson

Bounty

Test yourself with this sc-fi
text adventure.

Baldy ZX

Unique platform game
across 20 levels.

December 2013

THE SPECTRUM SHOW

ANNUAL 2013

Includes material not in the show!

SPACE INVADER SHOOTOUT

Which of the Spectrum
clones can claim to
be the best?

FLASHBACK 83

GAME REVIEWS

HARDWARE

SPECIAL FEATURES

The magazine of the show dedicated to the Sinclair Spectrum

Welcome!

Welcome to the first Spectrum Show Annual magazine. Thanks for taking the time to download and read it.

If you didn't know, this magazine is a yearly roundup of the reviews and features that appeared in the monthly YouTube show of the same name.

First let's get the introductions out of the way. I am Paul Jenkinson, a veteran of computing, or as people often call me, a grumpy old bloke who sits about reminiscing about the good old days. I am also the author of several games for the Spectrum including *Kyd Cadet* and *Chopper Drop*.

Now that's done, let's get down to business. This magazine is not (and will not be) a regular occurrence, and will (possibly) be produced when time allows. It will tie in with the show and collect content together based on a given year. It will also feature things that never made into the video show for various reasons.

Some things didn't fit in with reviews, were too short for full features and so were put to one side and left. I can now finally publish these here.

Of course, I am always looking for ideas and help with the shows, especially around hardware.

If this kind of thing floats your boat, get in touch—any help appreciated.

I hope you enjoy this first edition and please get in touch to tell me either way (see below).

The shows continue on YouTube...



HELP WANTED!

If you want to help with articles, reviews or features please contact me
www.randomkak.blogspot.com

CONTENTS

Editorial	1
Some waffle, a welcome and this page you are reading right now!	
Spectrum News 1983	2
Round up of Spectrum news from 1983 with top selling games.	
Spectrum Space Invader	4
Which is the best Space Invader clone for the Spectrum....	
Game Reviews	11
Game reviews, both old and new...	
Joysticks at Dawn	17
The history of the joystick interface.	
Game Creation.	19
A look at game creation programs.	
Game Reviews	23
More game reviews.	
The Great Pretender	23
Review of the Rotronics Wafadrive	
Dream Breakers	25
How CRL broke my dream.	
The Real Pacman	30
How to run Pacman ROMS on your Spectrum.	
1983 Top Sellers	30
Top selling games of 1983.	



NETWORK YOUR SPECTRUM

A new local area network solution for the Spectrum is being developed by Sinclair as part of the new interface soon to be available.

The Interface 1, required to run the new Microdrives, will not only feature an RS232 interface but the ability to network up to 64 Spectrums together.

COMPILER DISPUTE

Softek and Silversoft are in dispute over a game with both companies making claims and counter claims.

Slippery Sid, a game based on Snake and sold by Silversoft, was written using the Super C compiler. However, the compiler was written by Softek.

Because of this, Softek are saying they are entitled to royalties from any games sold. They claim this legal detail is included in the instructions. It also claims that the because the compilers binaries are included in the compiled game, that it is illegal to sell it without payment.

Silversoft state the compiler was purchased mail order and that there was no mention of royalties in the advert and therefore any claim is invalid. They threaten to take this matter as far as is required to avoid paying any money to Softek.

FIRST TAPE MAGAZINE LAUNCHED

Argus Press launches what they claim to be the first computer magazine on cassette.

Called *Spectrum Computing*, it is obviously aims at Spectrum users and will be compatible with 16 or 48k machines.

The magazine will include reviews and software and will be available from WHSmith and John Menzies for the price of £2.99.



ROM INTERFACE ANNOUNCED

Psion and Sinclair are jointly working on a new ROM system for the Spectrum that will see games loaded via cartridge rather than tape.

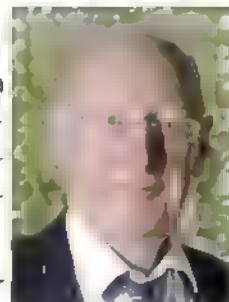
An interface will be required and Sinclair say this is expected to be about £20.

Psion claim to be preparing six titles to be launched along with the interface, and hope it will stem piracy which they claim is taking nearly £3m a year from the company.

ARISE SIR CLIVE

Clive Sinclair has been awarded a Knighthood in the Queen's birthday honours. He said it was completely unexpected and a wonderful surprise.

At 42 he is said to be the founder of the worlds largest volume manufacturer of personal computers.

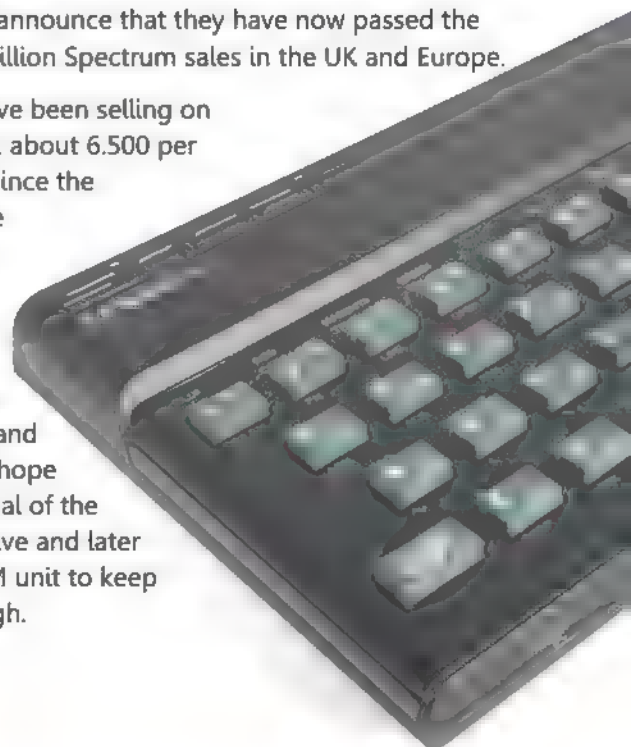


5000 SPECTRUMS SOLD

Sinclair announce that they have now passed the half a million Spectrum sales in the UK and Europe.

They have been selling on average, about 6,500 per month since the machine first

came into the market and Sinclair hope the arrival of the Microdrive and later the ROM unit to keep sales high.



STOLEN SPECTRUMS



Three thousand spectrum have been stolen from a warehouse in Hornsey with an estimated value of £380,000. They were being stored there by distributor Prism ready for shipping to retailers.

Four people faked an accident outside of the warehouse and as an employee came to help them

the gang produced a saw-off shotgun and forced their way in.

Two lorries were filled with the machines and driven off before police could arrive.

Luckily the thieves were not too bright and later tried to sell the stolen machines to retailers. Unfortunately, the retailers were the same the ones due to receive the original batch and immediately notified the Police.

The machines were recovered and a number of people are 'helping police with enquiries'.

MICRODRIVE PROBLEMS

Sinclair's mass storage unit for the Spectrum has had nothing but difficulties since it was launched, with users having to wait months before they get their goods.

There are still problems with despatch and Sinclair refuse to say how many orders are still outstanding.

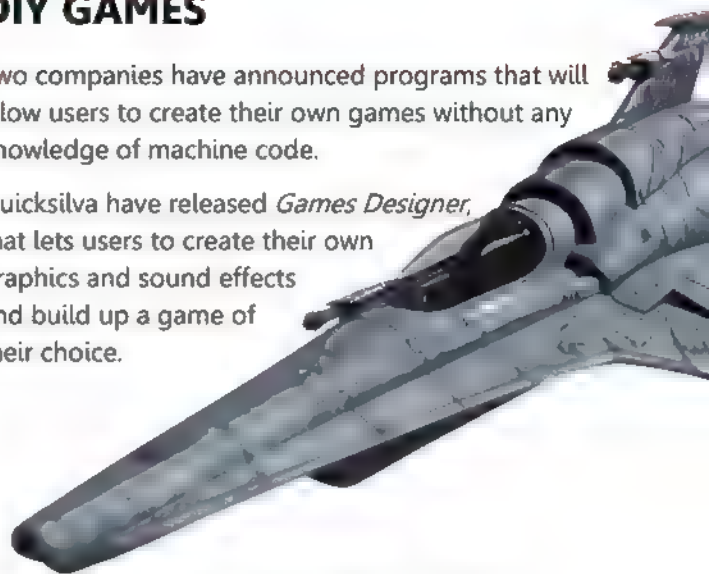
Psion, the company who are providing the bundled software have also stated they are being held back because of a shortage of cartridges.



DIY GAMES

Two companies have announced programs that will allow users to create their own games without any knowledge of machine code.

Quicksilver have released *Games Designer*, that lets users to create their own graphics and sound effects and build up a game of their choice.



The program is written by John Hollis, author of Time Gate and will be the first to be produced by the new company Software Studios, set up by former Quicksilver staff, John and Nick Lambert.

Melbourne House have released *HURG* (High level, user-friendly, real-time games designer), that does the same things.

Melbourne house however, have also launched a competition for the best game created using this tool, with a prize of £3000.

ACORN VS SINCLAIR

Sinclair have announce their intention to challenge Acorn for the new BBC computer contract when it comes up for renewal next summer.

They have openly admitted it is of interest to them and are in contact with the BBC to see what options are available.

BUG-BYTE LOOSE MINER

Bug-Byte software will loose the right to sell top selling game Manic Miner. Split in the company will see several employees leave to set up a new company Software Projects.

Amongst the break-away team is Mathew Smith, the author of the game.

SPACE INVADERS

They came from outer space.....

The father of all classic arcade games, Space Invaders was created by Tomohiro Nishikado and distributed by Taito in 1978. It was an instant success causing a shortage of 100 yen coins in Japan as youngsters queued to defend the earth against the invaders from space.

Moving to the USA proved a bigger hit grossing \$2 billion by 1982 with a massive 60,000 machines eating coins in every bar, diner and club.

The premise of the game is simple; lines of invading aliens move across the screen slowly, descending when they reach the end. The player controls a laser base that fires single shots to destroy them. The aliens fire back and the player can either dodge the shot or hide behind a series of bunkers. These bunkers are slowly eroded by the alien fire until there is no protection.

The player loses a life if the laser base gets hit or the aliens land and subsequently crash into it.

Space Invader clones were to be a major selling point for every video game system of the time including the Atari 2600 and of course the ZX Spectrum. Many companies scrambled to release a version into the bloating market and grab a share of the waiting cash.

But which of the games is the Spectrum Daddy?



SPACE INVADERS

ALIEN

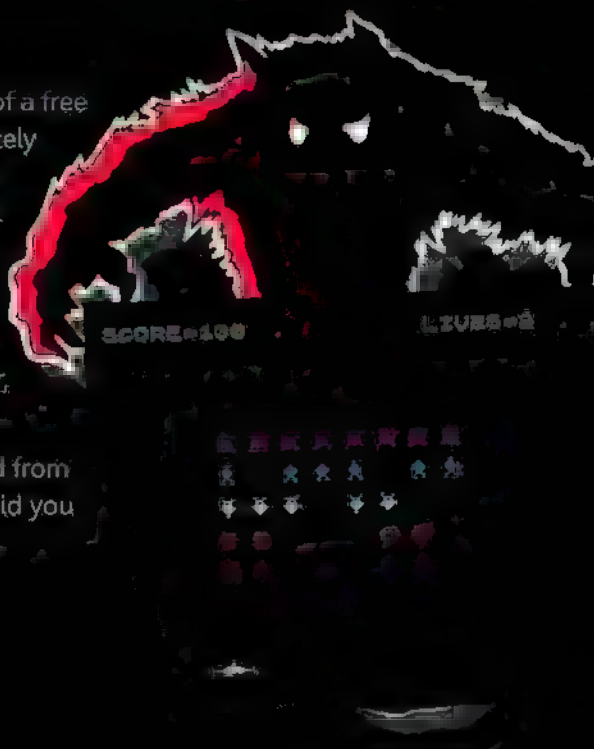
Cascade Games Ltd (Part of Cassette 50)

Cassette 50 was well known for only selling in moderate numbers because of a free watch given away with the package. The games included vary from moderately rubbish to complete and utter rubbish. Alien falls into the first category and although it is written in BASIC, it's actually playable; for a short time at least.

The movement is character based both for invaders and the laser base (they are both character-sized graphics (8 pixels square)). There is no animation and the invaders plod across the screen with simple beeps from the Spectrum's speaker. The bonus saucer never made an appearance either, which reduces this game's score.

The sound in general is pretty poor, using just the standard bleep command from BASIC. A brave effort in BASIC, and as it comes with 49 other games, what did you really expect?

Score: 1/10



BASE INVADERS

1983—Workforce

This version of the game features pleasingly large and well animated invaders, even if they do differ from the arcade machine. Each row has its own colour which makes for a good colourful look. In contrast, the laser base is disappointingly small, sticking to a standard character square. The aliens move along silently which does detract slightly.

The only sound in this game can be heard when one is destroyed, your laser base is destroyed. On the plus side, we do get the bonus saucer here, and again we have some sound to accompany it.

The movement appears to be character based, but with the large aliens (3 characters wide), it is less noticeable. The protective shields are extremely large and unlike the original, but at least they offer some protection from the colourful enemy fire.

A very annoying feature is the rising set of beeps (like

you get in BASIC) before and after each game. These take an age to get through when all you want to do is get back to killing aliens.

Talking of annoyances; each time an alien is destroyed, the game stops, plays the sound effect and then continues. This can become very distracting.

Score: 3/10



SPACE INVADERS

CLASSIC INVADERS

1990—Alternative Software

Initial thoughts on this game were that it was painfully slow, I mean really, really slow. The graphics are super smooth though and the aliens suitably well animated. All elements of the gameplay are present but the speed is just too painfully slow.

The speed issue is not by design though, it is just bad programming. This is proven when your laser base gets destroyed. In the early phases the animation and sound stutter and are slow but later phases, with fewer aliens, the things

zip along. This means that the game speed itself also improves the more aliens you kill, so by the end it is quite challenging.

The sad thing is though, once clear of the first sheet its back to the snail-paced full screen of aliens again.

Sound is minimal, only playing when the laser base is destroyed, so the whole game experience is let down. Classic Invaders has so many possibilities and yet fails to deliver on all fronts. The score is mainly for the smooth graphics and the playability in the later stages.

Score: 4/10

INVADERS

1982—Artic Computing

Now this is the version I grew up with and to think it was released in 1982, before many of its predecessors, is amazing when you consider just how good a game it is.

It has large, smooth, well animated and colourful aliens that make the blip blip noise as they move.

There are just the right amount of bases and the overall gameplay is well balanced and enjoyable. The only downside I can think of is the lack of a firing sound, the sound that became famous and instantly identifiable the world over.

This game also offers variations from the normal game with drifting alien fire and mutant aliens where the top layer mutate when hit and then require another shot to kill. Something different to keep the game interesting should you get bored with the standard game.

All this in just 16k! A fantastic version of the classic that will take some beating.

Score: 9/10



SPACE INVADERS

INVADERS

1986—Design Design



Design Design had a reputation for technical excellence and so I was looking forward to playing this game. Sadly it didn't live up to my expectations despite looking utterly authentic.

The aliens were just like the arcade in all their lovely monochrome glory, they moved smoothly and were well animated. The laser base moved well, the bases were right, so why disappointment? There are a few things bring this game below the five out of ten mark that simply cannot be ignored.

The aliens were just like the arcade in all their lovely monochrome glory, they moved smoothly and were well animated. The laser base moved well, the bases were right, so why disappointment? There are a few things bring this game below the five out of ten mark that simply cannot be ignored.

Firstly there is no sound. Nothing at all, not even (as with their other game *Body Snatchers*), when using a Fuller Unit. This obviously means playing in silence – not the best gaming experience. Secondly, there is no score, so all competitiveness is lost and the thrill of beating your high score vanishes, and thirdly when you die, the game resets back to a full set of invaders.

This could have been so much better; even with a few beeps here and there, a simple scoring system and the inclusion of lives. Surely that wouldn't be too difficult? It is, the game gets a below par score.

Score: 4/10

INVADERS

1983—DK Tronics

DK Tronics were one of the early companies producing arcade games for the Spectrum but sadly this isn't up amongst the best of their releases.

DK Tronics were one of the early companies producing arcade games for the Spectrum but sadly this isn't up amongst the best of their releases.

Character sized graphics with character movement make the game seem jerky, especially when compared to Artic's game. The invaders are animated but this is killed by the pixel jump they do each step.

The game play is faster than usual and can end up quite frantic, so some points there. The sound is grating and sounds like hundreds of tiny feet running around; maybe that was the idea! The invaders change colour as they drop down, but this 'feature' cannot save this game from a low score.

Score: 4/10



SPACE INVADERS

INVASION

1982—JK Greye



Greye produced some of the great ZX81 titles including *3D Defender* and of course *3D Monster Maze*, but their early games for the young Spectrum market did not make nearly as much impact as those 81 titles.

Invasion has character sized invaders that stomp across the screen in awkward waves that is only usually found in BASIC programs that are not fast enough to move that many images in a single stroke. Although colourful, the animation is poor and the sound is reminiscent of someone breaking wind in short bursts over and over again. Comical the first three times you hear it, but annoying after that!

The laser base looks like an invader and moves in the same 8 pixel jumps as the enemy, making accurate firing difficult. The sound, apart from the fart noise is pretty basic, with standard beeps when you die and nothing at all when you hit an invader.

Score: 3/10

SPACE INTRUDERS

1982—Quicksilver

Quicksilver is another iconic company that later went on to produce some really classic games such as *Ant Attack* and *Buggaboo*. Their skills however seem to be in unique games rather than arcade clones.

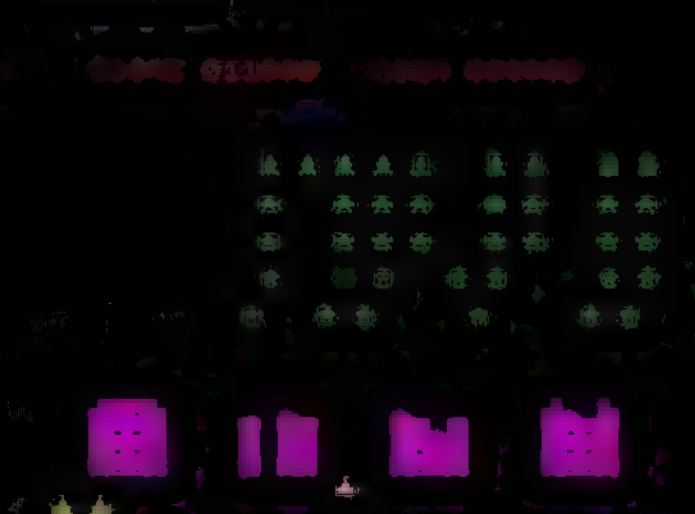
This is the first game of *Space Invaders* so far to have an attract mode, ideal for selling the game in the shops. All of the basics are here and even though the movement isn't to a pixel level, the game is very playable.

The character sized invaders move across the screen a line at a time, with a satisfying stomp as each one moves. The animation is adequate and the overall speed is just about right.

Sound is well used throughout with some nice machine code noises, and the game speed rapidly picks up creating a real challenge.

This is one of the better offerings despite the character based graphics and movement.

Score: 7/10



SPACE INVADERS

SPACE INVADERS

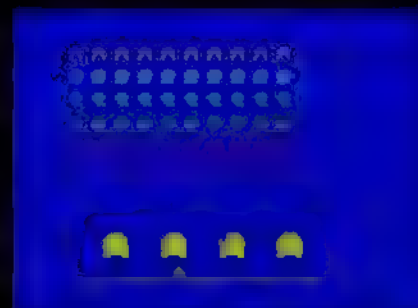
1983—Robert Spähl

This is a new game to me as probably because it was released in Germany. The very first thing that hits you when loading is complete is the blue background. Why is it blue and not black as all other invaders games are, and of course the arcade game which this is trying to imitate.

As soon as the game begins it is plain to see it is written in BASIC but even so, the amount of movement on screen is handled pretty well. The lines of odd shaped invaders, not at all conforming to the real thing, move along in rows on unanimated jumps without a sound.

The game play suffers because of the game's BASIC roots and you quickly want to move on.

Score: 2/10



SPACE RAIDERS

1982—Sinclair Research / Psion

The granddaddy of all Invader clones, probably due to it being an official Sinclair game, and one that people would identify with and buy. Not only that, but this is a very good game, much to my surprise.

I don't know why it came as such a surprise, maybe because I have been playing the Artic one for so long I didn't think anything could come close, how wrong I was.

This game has large colourful, well animated invaders marching across the screen in threatening ranks, dropping bombs towards your nice spaceship. The usual laser base has been replaced here with a lovely, smooth moving spaceship that is well matched in both speed and fire power to the invading hordes.

The sound is excellent too, from the stomping noise of the invaders to the firing of your laser, and it all comes together to make a really great and playable version of the arcade classic. Now I can see why so many people rate this game, and I have to be honest, I spent a good 30 minutes playing it, simply because it was that good.

The only bad thing I can say is that the game often stops to play a sound, this is particularly apparent when you hit the saucer. Nothing serious but it does put you off slightly.

Score: 9/10

000220 HIGH 000000



SPACE INVADERS

SPECTRAL INVADERS

1982—Bug Byte

Another well-known company and another Space Invader clone. This time Liverpool based software outfit Bug Byte bring us their take on the classic, and a nice game it proved to be.

The invaders are large, colourful and well animated, moving smoothly across screen, although there are signs of flicker every now and again. The stomp sound is replaced by a ra-

Score: 7/10 HIGH SCORE: 000000 PLAYERS: 000000



ther weak plink plink effect, which just doesn't have the same menacing feel.

The laser base is also animated, loading missiles before firing, and moving smoothly along the bottom of the screen. There is no firing sound which is a pity, and the alien hit sound is equally weak. The effect when you get hit is a bit of shock; the screen flashes red while a white noise sound is blasted at you! Then comes the most annoying part; after each life is lost you are prompted to press a key to continue instead of going straight back to the game with your next life. This slows the game down and lowers game play significantly.

Overall, a nice game spoilt by the interruptions after the loss of each life.

Score: 7/10

SPECVADERS

1983—Hewson Consultants



Hewson, later in their software lives, went on to produce some well-respected and excellent game like *Cybernoid*, *Firelord* and *Exolon*, sadly this early attempt comes nowhere near the quality of those.

The character sized, jerky invaders move silently across the screen in an unconventional formation, dropping fast bombs that are difficult to avoid. There are problems for Issue 3 keyboards too, as all movement and firing is disabled after you lose the first life.

Losing a life also resets the invaders so you lose any progress you might have made.

The sound, which incidentally causes the game to pause while playing, is quite good, apart from the death sound, which is just a series of ever lowering beeps. A bad start to what would become a blaze of glory for this software house, and one that should be avoided.

Score: 2/10

AND THE
WINNER
IS

Joint **1st** place:

Invaders—Artic Computing
Space Raiders—Sinclair

GUN LAW

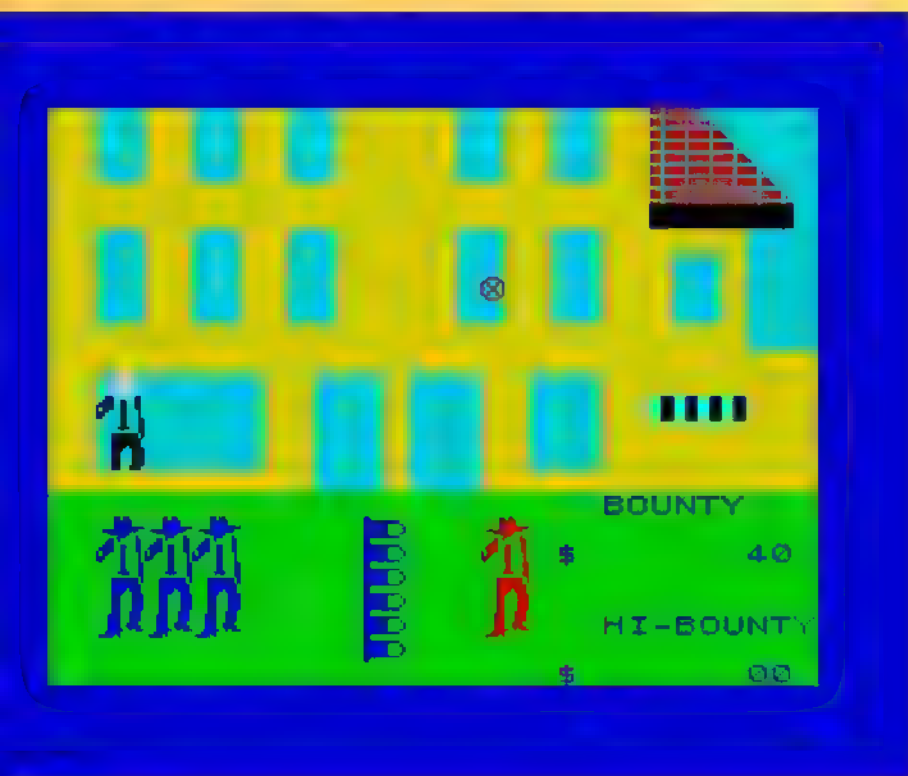
Vortex Software - 1983

This is a cowboy themed first person shooter...

Take any images of *Doom* or *Quake* out of your head though – remember this is a Spectrum.

You are a bounty hunter, hired to rid the town of an evil gang. This is not done via negotiation or interest groups.. But by good old gun fighting.

The screen is set out allowing you to view one side of a long western street. Various houses and scenery scroll past as you automatically walk along. Pressing a key will spin you around so you can see the other side. This is where the game can be tricky.

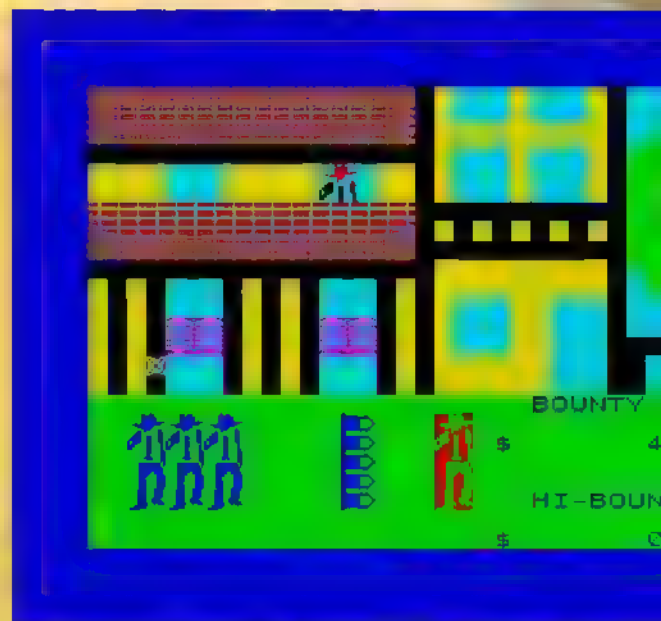


When a member of the gang appears, they may not be on the side of the street you are looking for, or if they are, they could be further along.

As the warning sound beeps, you have to quickly search for them, and then decide whether to shoot them or not based on the colour of their hats.

Some will definitely shoot you, other may not—it's a gamble because you have a limited number of bullets. These get replenished after a random amount of time, so it is important not to waste shots.

The graphics are very basic, mainly using character squares for



the areas of colour, but this was 1983. Despite this, the game does look quite nice, and even though the scrolling is character based too, this doesn't distract from the game.

Your crosshair moves in pixels, and moves smoothly along at a rate which is just right to give you that anxious feeling as you line up a head shot.

I like this game, despite its obvious age and can easily spend a good 30 minutes playing. Give it a try.



Maritrini, Freelance Monster Slayer

Mojo Twins - 2011

Maritrini wakes up with a hang-over and takes a phone call from her former employer...

His daughter has been kidnapped and the town is full of monster and zombies - but before he can explain the line is cut.

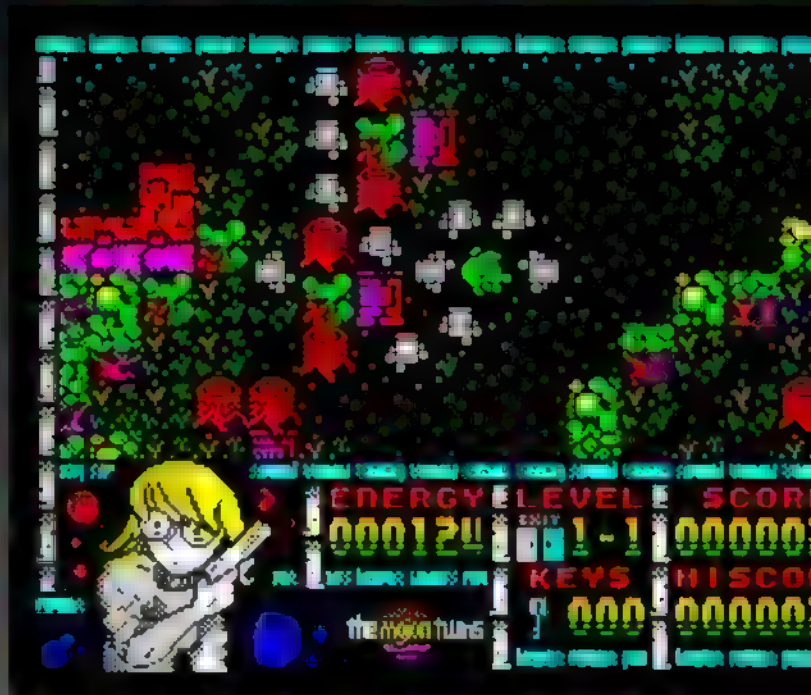
Maritrini sets off to help...

This new game is obviously a slant on gauntlet and includes some really nice mini-intros to each level setting the scene and expanding the story.

The main element of the game is a typical gauntlet style, overhead run and shoot affair, destroying monster generators, collecting food and finding keys that unlock the next area.

The four way it plays is character based, which sometimes detracts, but it is that way for a reason - to give you a sense of direction.

The game is a bit like the old school B&B game.



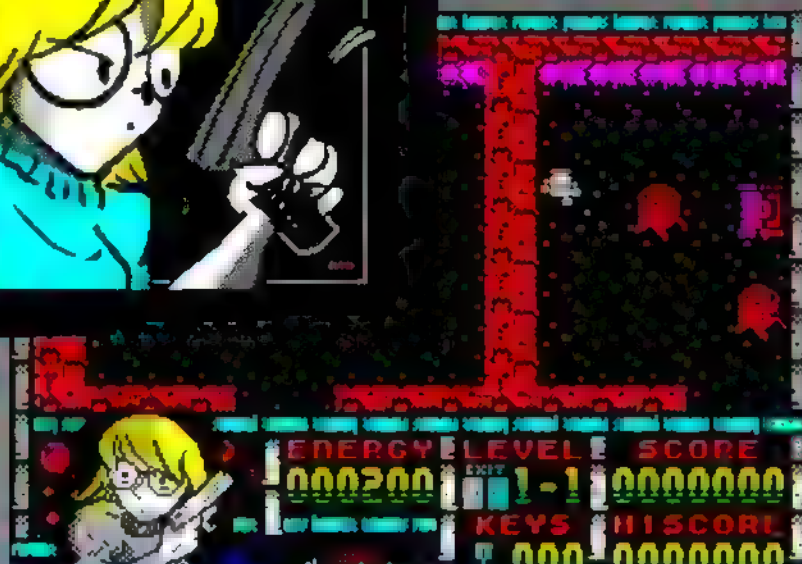
smooth and the game play is about right. Although I never managed to get past the second level.

The game is a bit like the old school B&B game. The game is a bit like the old school B&B game.

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PAINTER

A&F Software 1983

This is pre-Chuckie Egg and A&F were producing a mix of games varying from average to poor....

Painter sits way outside of average, happily settling itself into the good category – although it seems to have been missed by quite a few people.

Loosely based on the arcade game *Amidar*, the game sees you controlling Patrick the Painter in his bid to paint a large room filled with paint pots. You have a limited amount of paint and a crazy roller chasing you.



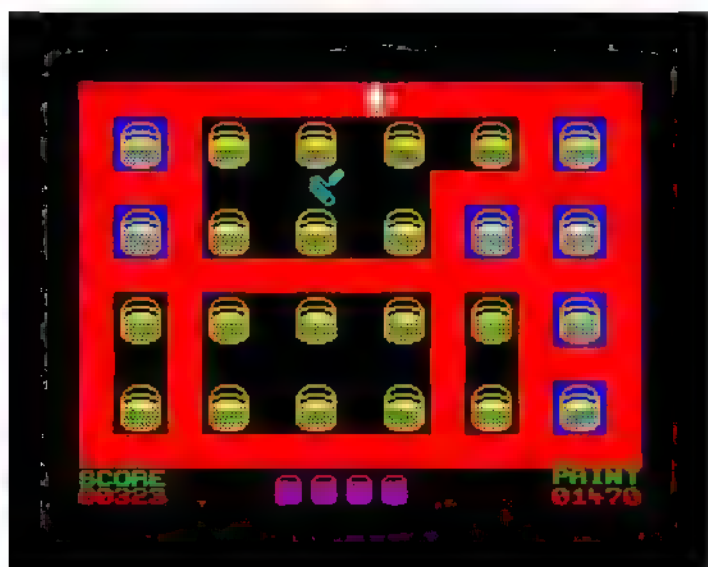
Sound is used well and the gameplay is very addictive, you certainly want to get back for just one more go.

As each level is complete, another roller is added making things much more difficult, and much more rewarding once you complete it.

At times it can become quite frantic, but never frustrating.

This was one of my first purchases and soon became one of those games that I loaded up now and again for a quick round of gaming. It's simple, well written and fun to play.

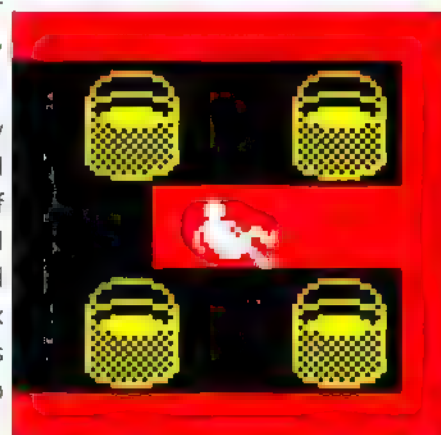
What more do you need...



Paint can be replenished by surrounding a pot and the level is complete when all the room is painted.

The chasing roller seems to have low intelligence, but this makes it more difficult in a way as you can't predict any patterns..

The controls are simple enough – up down left and right... and the graphics are large, well drawn and smooth.





WACKY DARTS

Codemaster - 1991

Get Yer Arrows Out...



This version of the ever-popular pub pastime takes a wacky look at the sport as the title suggests, but at its heart it's still a good traditional dart game.

After selecting your control type you get to pick the a player to throw against instead of working your way up. After a few games you soon get to know who the poorest player is so starting with him will take you slowly to the higher levels.

Each of the opponents has their own trait, for example the barbarian throws axes instead of darts! This however makes him quite easy to beat.

As you work your way through the players the game gets harder, as your opponents miss less and score more.

Your throw is taken in the usual manner with a moving hand that you have to manoeuvre into

place, taking into account the position of the hand. The further back the hand position is, the higher the dart will fly.

I found this one a little easier to play than other Spectrum dart games, consistently getting good scores once I had got used to the mechanics.

I suppose the control method that best suits you will win in the end though, so patience certainly pays off.

Your opponents are shown side and top down... taking their shots in the style associated with the characters. The commentator rabbits on and the crowd shout things out, this slows the game down though and you will find yourself prodding the fire key just to get back to the gameplay.

I worked my way through three challengers before it became a little tricky to match their scoring.

It was still an enjoyable game though, despite the annoying interruptions.

Another point, like other dart game, there is no hint of possible checkouts which is a pity really as I always ended up looking on the internet for a checkout table. Once I had this, it made for a much better game.

This game, although not taking itself seriously, is still a solid dart game with a reasonable challenge.



INVASION OF THE ZOMBIE MONSTERS

Ned and his girlfriend Linda, are enjoying a quiet moment together when suddenly an evil being snatches Linda away.

Ned is empowered by a moon ray and sets off to rescue her.

Using his new powers our hero has to battle his way across the city, infested with zombies, so that he can reach his girlfriend, save her and the human race from this evil.

This game is highly polished and quite obviously takes many ideas from the arcade classic, *Ghouls and Ghosts*.

The first thing you notice is the graphics – for a Spectrum, they are really good and use the limitations cleverly. Although the screen scrolls in characters this is hardly noticeable as your attention is fixed on the main character.

Because of the eight pixel scrolling, the game keeps its colours rather than having monotone graphics or the famous colour clash. This makes it look brilliant.

The game play is the same as the aforementioned *Ghouls and Ghosts* with the hero moving left to right, killing zombies, navigating platforms and collecting power-ups.

At the end of each stage is a boss to battle, and even for a bad game player like myself, the difficulty is perfect, meaning I got to see more of the game.

The Zombies vary from straight walking type, flying, bouncing and even some from outer space.

All can be dealt with a few light balls though and there is nothing that proves too difficult.

This is a great game to play, with an easy learning curve, great graphics, great music and excellent game play – as you may be able to tell – I like this game a lot.

Go get it now.. Its free.

<http://www.relevovideogames.com>

RELEVO
VIDEO GAMES



NINJA HAMSTER

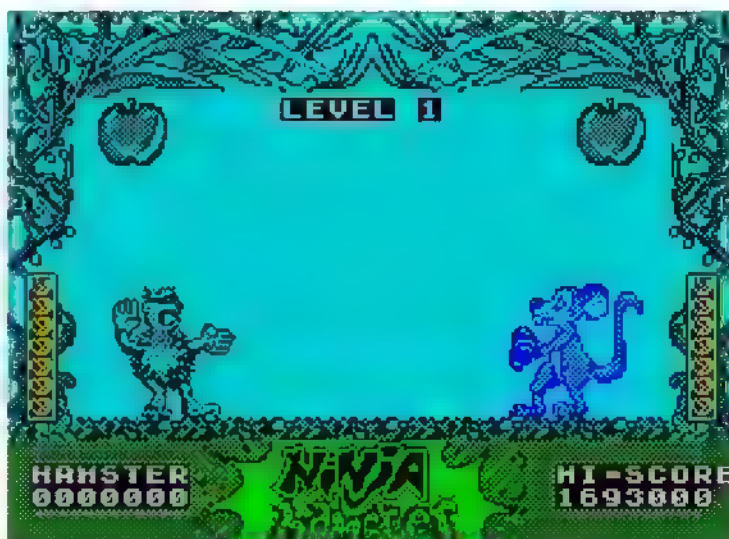
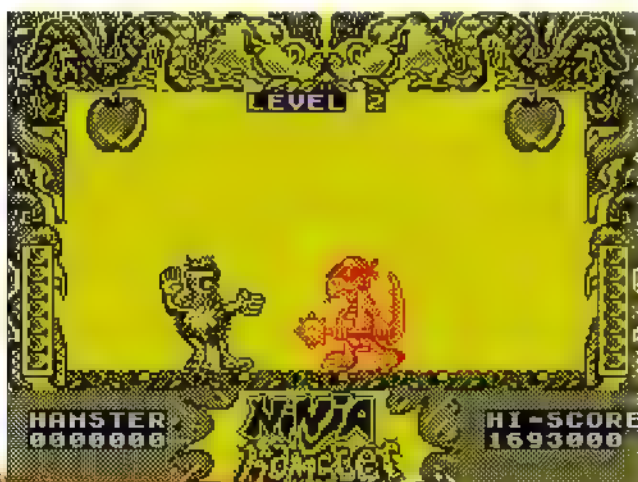
CRL - 1987

CRL developed as a company and went on to produce some, how can I say it nicely, average games, the highlight was probably *Tau Ceti* and the range of adventures based on classic horror stories like *Dracula* and *Frankenstein*.

Amongst them were a few games that struck odd combinations, probably the most weird was *Ninja Hamster*.

This beat-em-up focused on a hamster, out to get revenge by fighting a series of other equally odd characters and took the form of a traditional player verses computers combat game, although there was a two player option.

The range of attacks could be assigned to keys and included low kicks, high kicks, punches, flying kicks...



you get the idea.

The game begins with your hamster up against a rat, or to give him his full name, Sinister Rat.

Each fight has three rounds depicted by an apple that gets eating away upon knocking the living daylight out of the opponent, or he does the same to Hamster.

Health meters on either side of the screen show each characters health and is depleted when a successful blow is landed and rises slowly if there is no contact.

After the hamster despatches Sinister Rat, up comes Lizard Of Death to try his hand. The opponents get progressively difficult, forcing you, as Hamster, to use the blocking moves more and take different approaches to attacks.

If you are a good player, unlike myself, you can get to fight Mean Monkey, Barmy Bee, Crazy Cat, Perilous Parrot, Mad Dog and finally Loony Lobster.

This is a good game that I suspect will take on a different light when in two player mode. As it is though, its got nice graphics and sound, controls are responsive, and the difficulty just about right.

If you like your fighting games, ignore the fact it's a hamster, and give it a go...




Joysticks At Dawn



For what ostentatiously turned out to be a games machine when launched in 1983, the Spectrum strangely did not come with a joystick interface.

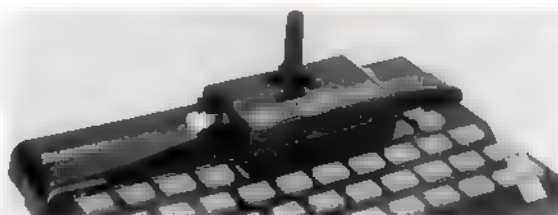
There could have been many reason for this, the most obvious is cost. Sir Clive wanted to keep the cost down to try and break the market currently held by the BBC Micro. The other main reason is that Sinclair Research wanted the machine not to be seen as just a game playing toy.

For whatever the reason, the 16k Spectrum and later the 48K version had no means to control games other than the rubber keyboard that we all came to love and hate in the same measures. From this grew what is now, at least for us older players, a standard set of keys from which to control games.

Originally, because Sinclair added arrows or cursors to the 5,6,7 and  keys, these were used by game developers despite the almost impossible positioning. Other games just used strange layouts, but eventually the standard was set, and the now familiar O,P,Q,A and Space was to be the norm.

It wasn't long before companies realised that the machine was heading towards games in a big way, and that being able to control the games via a joystick just like the arcades, would be a much desired choice. From this was born the first wave of joystick interfaces. Using the not yet standard 'Atari' type joystick connectors, the initial batch emulated the cursor keys to be compatible with as many games as possible. The problem with this was that all the games did not use this combination of keys for control. There was still no standard and the stage was set for a standards race.

Being expensive, nearly 25% of the cost of the Spectrum itself also did not help, and so a few companies went for a cheaper alternative – the mechanical joystick. Several of these were produced and consisted of a plastic, clip on joystick, that when moved, pushed down the cursor keys. I



can not comment on how successful this was in use, but needless to say they did not sell in any great number despite being much cheaper.

Another less known approach was the Games Board. A thin Spectrum shaped plastic cover that sat over the whole keyboard. Within this, over each key was a hole, and the user was supplied with a number of 'plugs' or 'pegs' that could be placed there. The idea was to stop the player being confused by which key to press, if the number of options was reduced. In effect the keyboard was reduced to a few round pegs sticking up from a plastic cover.

What was needed was a proper standard that all games could follow and all manufacturers could implement.



What was needed was a proper standard that all games could follow and all manufacturers could implement.

Growing slowly in popularity was the newly released Kempston Joystick Interface. This took a different approach to control, ignoring the keyboard completely and using a series of IN commands. Supplied with easy instructions on how to add control to your own BASIC games, this soon began to be the more popular choice. Gamers, short of money and quality releases, typed out magazine listings and could add joystick control in a few minutes.

Following suite, manufacturers released a flood of 'Kempston compatible' interfaces, and more importantly, a flood of games using the same IN commands for control along side the usual keys.

This was all looking good except for the truck load of games made before this new 'standard'. These of course did not work and so the next small innovation was about to arrive – the dual interface.

Essentially two interfaces in one, the dual approach allowed the use of both Kempston and cursor type joysticks by simply plugging your stick into the relevant port. This was short lived, partly because games were becoming more complex, requiring more keys, and also the growing number of games that didn't comply to either standard. Some games companies were slow of the mark here, and it took about 14 months before nearly all released games were Kempston or cursor compatible.

Perhaps the ultimate of these new interfaces was the Kempston Pro. It has 3 ports, one for its own format, one for the Sinclair MkI/cursor and one for the new Sinclair MkII joysticks. Not only that, but it had a ROM slot, allowing the newly released but short lived ROM games to be used.

With all these emerging standards something had to be done to make life easier for the player – it was time for the next invention, the programmable joystick interface. Allowing the user to 'program'

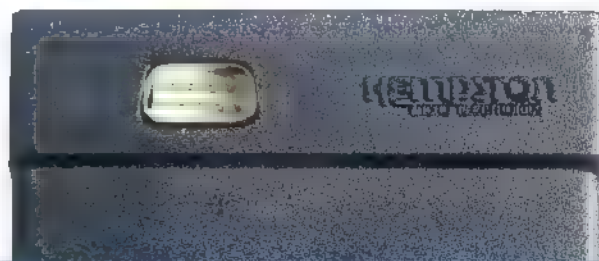
the interface to react as though a key had been pressed seemed the answer to everything, but the Kempston standard was far ahead by now. Sinclair produced their own standard, as did a few other players in the market, but none could match Kempston in popularity.

Wires and plugs...



Many methods were used for the 'programming' part, ranging from small machine code headers loaded before the game, to wires and plugs and even plastic code cards as seen in the Protocol 4. Because of the extra electronics, these tended to be more expensive at a time when the Kempston design was becoming cheaper – there was no real competition.

Next came the period when it seemed every manufacturer was trying to fit as much into the interface case as possible. Sound amplifiers, reset switches, sound chips, load/save switches and more. With the price of the Kempston circuitry dropping all the time, the reverse soon began to happen. Joystick interfaces were added to every other add-on and the standard had been set and Kempston had won.



GAME CREATION SOFTWARE

If you were not gifted with the logic and patience required to write machine code games you had three options.

First you could just use BASIC – but as time moved on, this route was just not acceptable anymore.

Secondly you could use a compiler to convert your BASIC game into machine code. This had varying degrees of success but was limited due to the technicalities of the compilers and the fact they often could not work with certain BASIC commands.

Lastly, you could buy one of the new game creation packages that were slowly arriving, and if you believed the hype that came with them, you could have your own machine code game ready to sell in hours.

The three main contenders were Games Designer from Quicksilver, HURG from Melbourne House and Arcade Creator from Argus Press.



GAMES DESIGNER

Quicksilver's entry allowed you to create everything needed to make your own game.

It used an easy to use menu system that allowed you to access every aspect of the game and to play or save the game for later use.

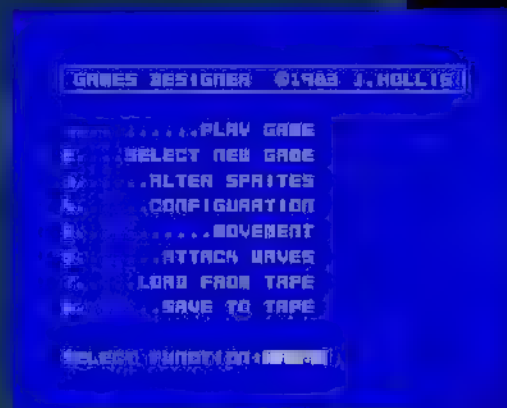
There were several pre-set game styles to use which were limited to variations of Invaders, Asteroids or Defender. In other words you could shoot upwards, sideways or in any direction.

Once you have decided which type of game to make, you then had to implement your idea; design the sprites, set the sound, create attack waves etc.

Sprites were edited using the standard grid editor and each sprite could have 4 frames of animation.

You had to make the player ship, bullets, aliens – or whatever you wanted to shoot – and explosions. There was no option for backgrounds. Enemy attack patterns are created by drawing lines with the keyboard to layout the route your attack wave would follow.

The configuration menu allows you to set the game format (as mentioned previously), background and foreground colours, FX and sounds. The FX section allows you to switch on the scrolling star field and set the direction.



coming later

H.U.R.G. Cont.

The player and enemy sections had the same functions.

You can load the player sprite and animate it, set movement limitations and speed and setup collision rules. The editor had useful options like mirror or to use an existing image – this helped when animating something and saved you having to draw it again.

When each section was complete you had the option to move to the next stage, which was helpful as it guided you through the full process. The same process was used to create the player bullet (if you chose a shooting style game) and other game sprites.

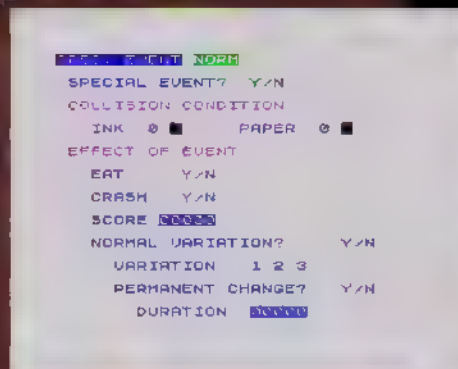
The movement patterns were easy to create and you could have up to eight different ones.

Once all this was in place, and for the record adding a player ship, bullet and one enemy took well over 2 hours, you could try out your masterpiece.

Having saved the files into the package the results were less than inspiring.

I did not create a title page or set out the rules for the next frame or stage of the game. I just wanted to shoot something, sadly even this caused issues. No matter what I did I could not get the player to shoot anything! If I set the bullet to exist it appeared straight away, if I didn't I couldn't shoot it!

The final nail in the coffin was the fact that games created with HURG could not be run alone, they could only be used from within the main HURG system.



ARCADE CREATOR

Argus Press released this package in 1986, two years after HURG and three years after Games Designer – would that time finally give us a decent application?

The standard menu provides the usual set of tools that every game designer needs.

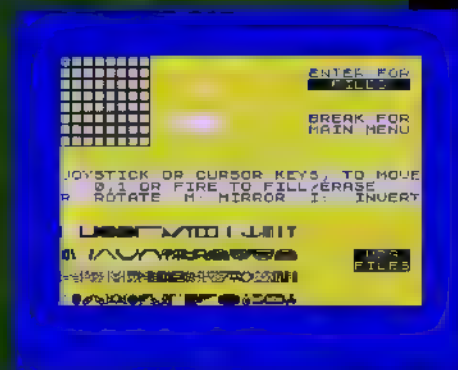
A UDG editor that allows you to build graphics for the backgrounds or platforms. There is no animation or special features (like collapsing floors or conveyor belts), just fixed 8 pixel squares.

The sound generator was quite nice and could be used to make some interesting noises. You can save up to 8 of these for use in the game for things like firing, explosions etc.

The sprite designer was painfully slow to use and took ages just to create a player ship.

Once that was done you could then add it to the sprite list and put in some animation. Again this was a very slow process.

Next we come to the screen designer and at this point I got the feeling the program was geared towards platform games. Here you can pick any of the four banks of UDG you created earlier and build up your screen.



ARCADE CREATOR cont..

Nowhere on the menu could I see a way to play or test the game, just the option to load or save.

Upon further investigation it seems this is how it works. You have to create your data and then save it to tape. To actually put it all together you have to load another program. This second program leads you through the process of putting all that game data together by using a series of fixed questions.

You can specify things like bonuses, scoring, number of aliens etc. before choosing your images you want to use for things like the player, explosions and aliens. This is a long process, especially after you have spent a good hour or more creating all the data in the first place, and you still haven't seen how the game looks yet.

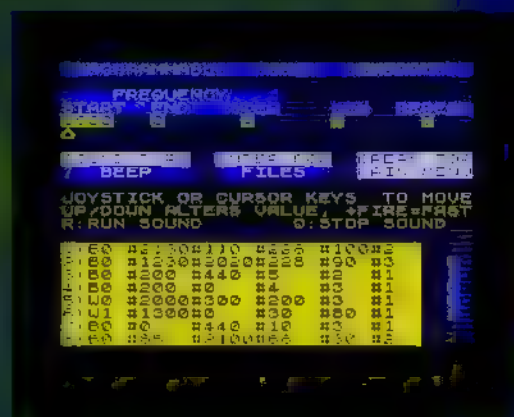
Finally when you have finished all the questions you can save the data to tape. At this point you can finally load it back in as a stand-alone game.

But the thing is... if there is anything just a bit wrong, you have to go back to the editor (another three minutes loading), load in your data (some more minutes) and then edit it, save it, re-load the builder, go through all the questions again, save it and then you can check it again. A huge amount of time!

After what seemed like a lifetime and getting nowhere, I decided to see what the demo game looked like, to make sure it just wasn't me doing something wrong.

When I loaded it reminded me of a game seen on one of those worst ever game compilations. Every aspect was terrible!

It was at this point I decided not to continue with this program, it just wasn't worth it, even if you could play the games on their own, no one would bother because they were so bad.



You can see all of these programs in action plus see the modern games creation tools in episodes 5 and 6 of The Spectrum Show.



ASTRO BLASTER

Quicksilva 1983

The original arcade game was released by Sega in 1981 and is a typical space shoot-em-up featuring different attack waves, asteroids and motherships. It also had the added complexity of having to monitor fuel and temperature. Too much heat and the weapons are disabled, too little fuel and the ship explodes.

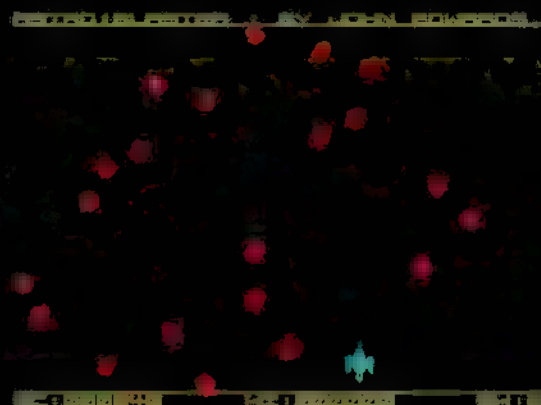
Quicksilva's Version, Astro Blaster, does not have all of these features, however many of the levels are present.



There are waves of aliens that fly horizontally across the screen, occasionally dipping down and continually dropping bombs.

Because of the screen layout, the room from the aliens to your ship is much smaller than the arcade, making it difficult sometimes to get beneath to line up your shot.

Clearing the first two waves moves you to the next level where you have to navigate through a red asteroid storm, just like the arcade original. The difference here though is that in the arcade, shooting some of the asteroids would refuel your ship. In this version, you just have to dodge them. Not all of them can be



shot too, so the best policy is to keep moving and shooting.

If you manage to survive this level, then the large mothership appears, spewing out a storm of missiles, again similar to the arcade. This level can be tricky if you don't get your shots in early and destroy the thing before it fills the screen with bullets. Most of the time you can anticipate where it will appear (middle of the screen) and flood this area with laser fire to quickly dispatch it.

Once the mothership is destroyed, its back to the aliens again with different sprites but the same attack patterns.

The graphics are smooth but the enemy only have two frame animation, although you are too busy killing them to really notice. Sound is almost continuous because of the firing, and suits the game well.

Control is responsive and you have a choice of keyboard or joystick.

For an early shoot-em-up, I like this game, and it's one I return to every now and again just to blow up a few green aliens.

A nice game then, especially for 1983.

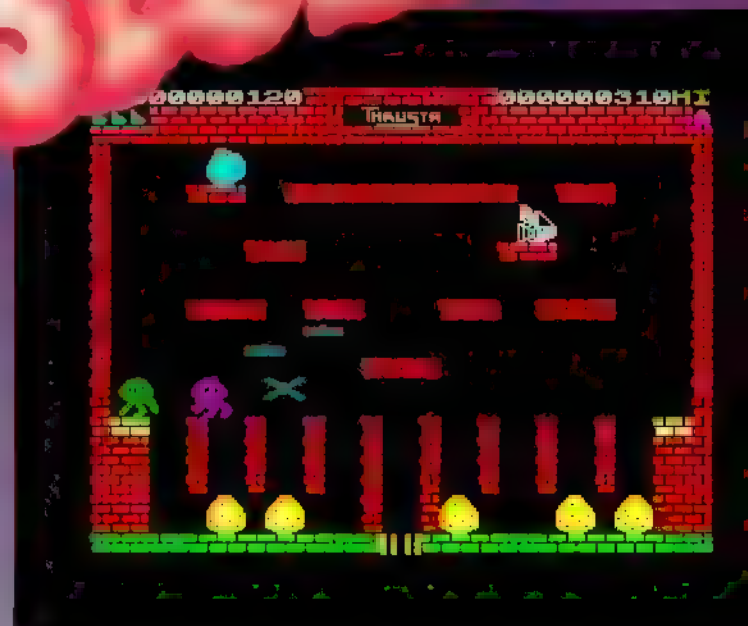
Thrusta

Released in 1983, Thrusta was one of the first batch of games produced by the Liverpool based software house most famous for *Manic Miner* and *Jet Set Willy*.

The early games, including *McKensie*, *Ometron*, *Orion* and *Push Off*, for me Thrusta was probably the best and most original.

The game sees you controlling a low powered space ship out to destroy aliens in their nest before they can grow up and pose a threat to some civilisation or other.

Your craft can shoot the nest guards but not the aliens themselves. Who on earth sent a ship like that to tackle such a mission?



guards and aliens change per level keeping the game fresh and the challenge is constant throughout.

The guards can become a real pain, especially if they trap you on the upper level. You have to be patient, bide your time, and soon enough your chance will come.

With careful planning you can kill three or four aliens at the same time on some levels as they often line up just below one of the platforms. Getting the rock in place is the challenge, and this what makes the game different. On some level, only certain platforms are useful, and to get the rock into position, you have to carefully manoeuvre it, all the time avoiding the guards.

Your ship is affected by gravity, so you have to use your thrust to move around, and controls are responsive.

The sound is good and the graphics are large, colourful and well animated.

The game is fun to play and can suddenly shift from calculated rock dropping to hectic shooting quickly. The only thing I don't like is that the laser you have often has no effect on the guards causing you to die despite having shot them several times.

In my opinion this is the best of the early bunch, and certainly well worth a look.



With this limitation you obviously have to find another way to destroy the aliens, and someone has thoughtfully provided a large rock that can be pushed around and dropped on the young creatures. The rock is also magically replenished once it has smashed into the heads of the aliens, ready to be used again.

The guards move around randomly and the aliens move in different patterns depending on the level you are on. The

ANTIQUITY JONES

Paul Jenkinson 2012

In a lush room, deep in the university, Jones was abiding away some time when he suddenly became aware of someone in the room. Turning slowly, the silhouette of a tall, long coated man stood in the doorway.

"So what is it this time?" asked Jones, spluttering.

His last trek for these people had ended in disaster, and he had been left for dead. A very organisation that had recruited him for the expedition.

"Nice to see you too," the man said, smiling. "The climb, little bit?"

The old man said in a

"No, no they didn't. I will be back soon," he said to me to, but then again Mr. Jones added to this game we play

"It may be a game to you," Jones said, "but it sounds like on the

"Easy, easy... I'm going. I'll let someone else take the glory for finding the Chalice of the Ram Kar."

That's part of the introduction for Antiquity Jones, a game released in 2012 by Paul Jenkinson.

The game was created using AGD (Arcade Game Designer) and proves what a versatile



tool it is. The game is certainly release quickly and has great graphics, sound and playability.

The idea of the game is to find the chalice of the ram kar. The main character can jump, climb and swing from ropes to make his way to the final temple.

Of course this being the jungle, there are creatures in abundance, and Jones has to avoid these or risk losing health.

His health slowly runs down as he travels around, but luckily can be replenished at set points in the game.

This introduces another dimension to the standard platform game and makes progress a dash for health.

Once the Chalice has been found, his health is frozen (unless hit by an enemy) and so he can carefully make his way back to the lorry on the first screen.

There is some nice music on the intro screen and a choice of controls.

Once into the game, the graphics are well drawn and animated, especially the way he jumps, and move very smoothly. The scenery, initially a jungle, does change and our hero finds himself in a desert and a cave system.

Sound is minimal but put to good effect, and the whole game is great fun to play.

A great game!





The Great Pretender

The Rotronics Wafadrive

The Rotronics Wafadrive was released as a direct competitor to Sinclair's Microdrive, offering large storage and fast access, something to replace the painfully slow cassette medium.

As with the Microdrive, it never really managed that task, and the Rotronics system never reached the sales numbers the Sinclair units did.

It is a large device that connects directly to the spectrum via the edge connector and offers a direct pass-through for other peripherals. Also included in the unit, as well as the dual drives, is a centronics printer port and an RS232 serial port.

The dual 128k drives used the same continuous tape loop system like the Microdrive, but used lower quality tape. This inevitably led to higher return rates. The wafas came in four flavours, 16k, 32k, 64k and 128k, with speed differences between them. The 128k wafas were slower due to the seek times on a tape loop system. The drives also worked at two speeds, the faster one used for seeking and the slower one for loading.

Compared to Microdrives the loading speeds were slower, a 32k game took around 40 seconds compared to 12 on the Sinclair unit. These speeds must be taken with a pinch of salt however, as the speeds vary a lot depending on the wafa, and if there is any other data on the tape.

Commercially, there was very little software released for it, *Sherlock*, *Mugsy*, *Heatrow*, *Nightflight 2*, *Starbike* and the



Seibad trilogy, *Bear bover*, *Loopy Landry*, *World cup*, and *The Artist* are the only ones that come to mind.

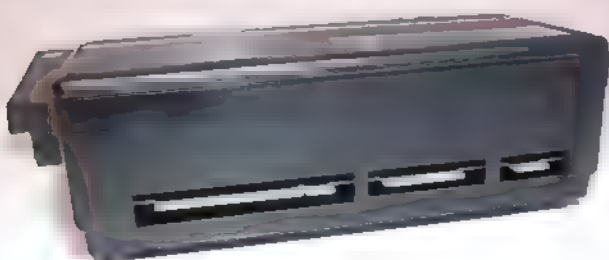
Supplied with the unit was a word processor called *Spectral Writer* and a utility wafa containing transfer, formatting and header reader tools.

Initiating the on-board ROM (by typing NEW *) caused the Spectrum memory to be paged out and the Wafadrives OS paged in, offering new commands to format, verify, catalogue save and load. The disadvantage of this was that it took up 2k of RAM, meaning any large 48K games would not work if they used all of the available memory.

Loading and saving your own games was easy enough, but transferring commercial software proved very difficult, almost always involved writing your own BASIC loaders.

The syntax was not compatible with the Sinclair ones, meaning anything saved or loaded had to be changed.

LOAD *"*a:miner*" would load a program called miner from the A drive.



The Great Pretender

The Rotronics Wafadrive



Having tried many games, including early 16K ones like *Frenzy* and *Galaxians*, after 3 hours I still hadn't managed to get a game onto a wafa.

Doing this with protected software would be impossible, even using a multiface device would involve modifying the loaders to take into account the new syntax.

Finally, after another hour I managed to get Bug Byte's *Birds and the Bees* transferred across. This 25K game, normally takes about 2 minutes and 25 seconds to load from tape but using a 32K wafa the game loads in 1 minute dead.

Demand for the unit was not high and the price soon began to drop from its opening price of £129 to just £14.99. At that price it should have been a huge success, but because of a lack of support from games companies, the unit went the same way as the Micro-drive.

SPEED COMAPRISONS

Test	M/Drive	W/Drive
Load 35k game	12 sec	40 sec
Format	35 sec	90 sec
Transfer rate	121 kilobaud	18 kilobaud
Worst access time	8 sec	23 sec

ONLY
£129.95
MICRO & POSTAGE

How much would you expect to pay for a dual 128K fast access storage system for your Spectrum that included Centronics and RS232C interfaces and free word processing software as standard?

Chances are it's a lot more than £129.95. But this system will save you the trouble. Rotronics Wafadrive is the answer. There are no extras - the price includes VAT and postage.

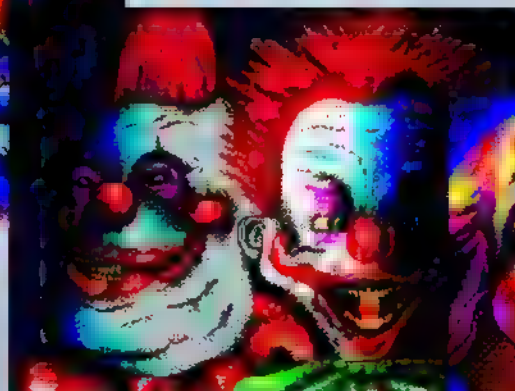


A fast reliable dual-drive storage system

SPECTRUM ART



Someone say the Spectrum has rubbish graphics?



More from...

<http://zxspectrum48.i-demo.pl/zxgallery.html>

RETRO-2008
retro-computers festival
<http://zxparty.netopc.com>

The Dream Breakers



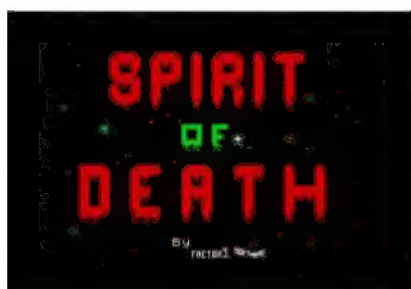
Those of you who know the Spectrum scene may recognise the title as a parody on a slogan once used by, in my opinion, one of the worst software houses ever to advertise. The company was CRL, or to give them their full name, Computer Rentals Limited. Their advert, emblazoned with 'The Dream Makers' caught my eye at possibly the worst moment in time, let me explain.



In early 1984, March to be exact, (I kept a diary), I had just finished what I considered to be my first 'real' game. Having spent months knocking out poor Invader clones, and text adventures that didn't even allow you to pick up objects, I at last completed it. The whole project had taken little over a few weeks, but to me, it was a brilliant achievement. A fully fledged text adventure, fast parser, pick up and dropping of objects in any location, and all

in blistering BASIC. Although written in this language, the game held up well compared to the adventures on the scene at that time, even though it didn't have a save or load routine.

After having taken it to a local computer shop, who took every available opportunity to tell me they were going to market their own games, (probably just to impress me), the game was returned with a shake of the head. Trudging back home downhearted, I flicked through a magazine and there it was, inviting me to send my game to them and make my dreams come true.

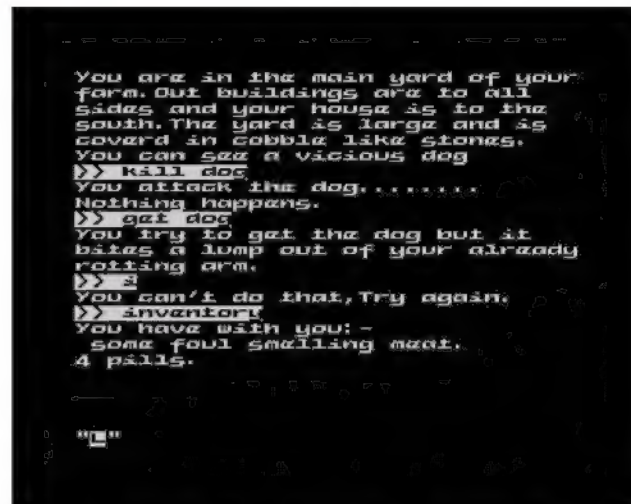


I quickly phone CRL on 15th June 1984 and was told to send it straight away. Having packed it up with great care and enthusiasm, the parcel was handed

over the post

office counter the next day, and my dreams were about to become reality.

Having read an article about sending games to software houses, and not wanting to annoy them too much, I waited for the golden letter. Then it happened. The 26th June 1984. Waiting for me when I returned from work, was a small brown parcel on the mat behind the door. Quickly I ripped it open and out fell a letter from CRL. I was ecstatic, but it didn't last long. Following the letter



came a cassette box, the wrong cassette box, not my cassette box. I read the letter that was addressed to Mr. David Head, and found out that his game, 'Raiders Of The Lost Ark' was not suitable for publication due to copyright reasons.

Even though I was annoyed, deep down I knew my game was still in with a chance. I called them and was told to return the package and they would forward my letter and game back. This I did, and again the waiting started. In fact, it went on and on. By mid July, I got so bored of waiting that I had written another, better, game! Having still heard nothing by the 29th, I phoned them up.

"We are sorry about the delay, but the secretary is off and everything is running late. I will get onto it and you will probably get a letter by the middle of next week."



The Dream Breakers cont...

Meanwhile, work started on yet another game.

3rd September and I called again. This time the office manager informed me he would definitely get a letter to me within a week. More waiting... the 13th came and went, and still nothing.

On the 18th of September, I called them again. The voice informed me that he was aware of the problem and that it was 'being dealt with'. By now I was getting a little frustrated, having done everything they had asked, including paying for the return of someone else's game.

October began in much the same way. Me waiting about, writing other games and still wondering what the hell was happening to my dream. On the 15th of October I rang again, this time talking to a Mr. Ashly Hilderbrandt, and this time a little bit of the truth came out. My game was, apparently, somewhere in the middle of England. They had returned my game to David Head and were now trying to get him to send it back, but without much success.

Upon my return home from work on the 17th October, I was astounded to see a large padded envelope lying behind the door. Further examination revealed a business card, a compliment slip with that bloody slogan on it, and Mr. Hilderbrandt's message; "Many apologies for the delay and problems." accompanied by 4 CRL games.



Those games were; *Glug Glug*, (possibly the only half-decent game they did), *Test Match*, *Terrohawks* and *War Of The Worlds*. Now don't get me wrong, I was pleased with this, but that was not the point. I wanted my game back, I wanted my dream back.

More time passed, and news of the new Sinclair + machine began to filter through to the public. Still no news of my dream as October drew to a close. Dark Star, the new *Design Design* game was released on Saturday 27th October and was played to death over the weekend. On Monday yet another padded envelope had appeared on the mat, and this time there was a letter. It laid out the storey of my game, although to this day I do not believe that all this could have happened to me.



Having sent my game to the wrong person, the person, Mr. Head, then proceeded to move house. CRL tracked him down only to be told that my game had been lost during the move. LOST ! My

dream was shattered and I never sent another game to anyone.

They did send me, as compensation (or maybe a way to try



and stop me bugging them), three more games; *Warlock Treasure* (which wouldn't load), *Magic Roundabout* and the *Highway Code*.

I decided to let it go, and give up on my dream.

Maybe these things did happen, maybe they didn't. Who can tell, but if Mr. David Head is out there, maybe he would like to confirm this.

Am I judging CRL too harshly? After all, they broke promises and dreams, and caused a young boy to loose his belief in the seemingly magical world of Spectrum software.

Every one's dream was to become a successful games writer, some made it, some didn't try, and some got ripped off and messed about. There was nothing that could be done or can be done, but this is my story, and I hope that others didn't suffer the same fate. I have hated CRL ever since, and none of their software has ever tempted me to think otherwise. If I had wanted the games I would have asked for them, (I certainly wouldn't have bought them), all I wanted was my game back and the truth.

I remember some time later, reading the Ashly Hilderbrandt had moved away from CRL, taking up another high position with some other company.

If you are out there Ashly, do you remember these events? Probably not! The sad thing is, I do.



THE REAL PACMAN

There are loads of games for the Spectrum that are either direct copies or imitation of the great arcade game Pacman. Some of them are good, others forgettable, but they all have one thing in common—they are interpretations.

The age of emulation is now with us and there are some truly wonderful systems out there that let you play real arcade games on your home computer. All of them require a little more processor power than the humble spectrum, however some clever chap by the name of Simon Owen has found a way to emulate Pacman on your Spectrum.

No interpretations, no guessing and no re-writes, this is the real Pacman!

The ROMS of the arcade machine are used to create a TAP file, that when loaded into a 128k Spectrum, gives you the full game, complete with sound and optional colours.

So, what do you need?

First go to Simon Owen's website (<http://simonowen.com/spectrum/pacemuzx/>) and download the program that does the conversion. Then get the Pacman arcade ROMS (Google is your friend).

Run the batch file and instantly you will have .tap file ready to play.

Fire up your 128k Spectrum (or emulator) and you'll be playing the real Pacman.

1UP
240



TOP SELLING GAMES - 1983

Orbiter
Penetrator
The Hobbit
Horrace Goes Skiing
Jetpac
Pssst
Manic Miner
Ah Diddums
Ant Attack
Lunar Jetman

Silversoft
Melbourne House
Melbourne House
Psion / Sinclair
Ultimate PTG
Ultimate PTG
Bug Byte
Imagine
Quicksilver
Ultimate PTG



THE SPECTRUM SHOW

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